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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

February 1946-1947

SOURCE AND DISPOSAL OF ENERGY—MONTH OF FEBRUARY

	1947	1946	%
GENERATION* (Net)			
By Fuel Burning Plants	13,260,698,000	9,967,382,000	+33.0
By Water Power Plants	6,354,855,000	6,225,914,000	+ 2.1
Total Generation	**19,615,553,000**	**16,193,296,000**	**+21.1**
Add—Net Imports Over International Boundaries	95,367,000	122,610,000	−22.2
Less—Company Use	148,854,000	135,156,000	+10.1
Less—Energy Used by Producer	324,536,000	44,867,000	.....
Net Energy for Distribution	**19,237,530,000**	**16,135,883,000**	**+19.2**
Losses and Unaccounted for	1,454,268,000	1,215,653,000	+19.6
Sales to Ultimate Customers	**17,783,262,000**	**14,920,230,000**	**+19.2**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of February 28th			
Residential or Domestic	29,990,661	28,391,651	+ 5.6
Rural (Distinct Rural Rates)	1,405,458	1,244,038	+13.0
Commercial or Industrial:			
Small Light and Power	4,726,051	4,452,184	+ 6.2
Large Light and Power	175,484	164,722	
Other Customers	126,912	118,184	+ 7.4
Total Ultimate Customers	**36,424,566**	**34,370,779**	**+ 6.0**
KILOWATTHOUR SALES—During Month of February			
Residential or Domestic	3,959,621,000	3,504,561,000	+13.0
Rural (Distinct Rural Rates)	294 911,000	243,019,000	+21.4
Commercial or Industrial:			
Small Light and Power	3,141,951,000	2,708,089,000	+16.0
Large Light and Power	8,987,780,000	7,082,959,000	+26.9
Street and Highway Lighting	203,519,000	198,398,000	+ 2.6
Other Public Authorities	506,368,000	518,063,000	− 2.3
Railways and Railroads:			
Street and Interurban Railways	416,927,000	394,045,000	+ 5.8
Electrified Steam Railroads	225,933,000	220,158,000	+ 2.6
Interdepartmental	46,252,000	50,938,000	− 9.2
Total to Ultimate Customers	**17,783,262,000**	**14,920,230,000**	**+19.2**
Revenue from Ultimate Customers	**$320,173,600**	**$288,856,200**	**+10.8**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—for 12 months ended February 28th			
Kilowatthours per Customer	1,349	1,257	+ 7.3
Average Annual Bill	$42.90	$42.17	+ 1.7
Revenue per Kilowatthour	3.18¢	3.39¢	− 6.2

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 15 MAY, 1947 No. 5

AGA—EEI Accountants Hold Lively Conference

Wide Range of Papers and Reports Received with Deep Attention

ON April 7-8-9 in the Statler Hotel at Buffalo, New York, the Accounting Division of the Institute in cooperation with the Accounting Section of the American Gas Association held one of the largest and liveliest conferences in the history of the series of joint meetings, which started in 1937. Over 600 registered and a number of others, including some of the local utility men and representatives of accounting machine distributors, attended certain meetings without registering, bringing the total number attending the conference up to approximately 700.

The program provided under the energetic direction of chairmen H. P. Taylor of the E.E.I. Accounting Division and Leith V. Watkins of the A.G.A. Accounting Section covered a wide variety of important topics. All meetings, from the General Session on Monday afternoon with which the conference opened, to that of the most highly specialized sub-committee, were well attended and great interest was displayed everywhere. Reports and papers were received with deep attention and discussion whenever that was possible was lively and provocative.

General Session

The conference began with a general session on Monday, April 7, at 2:00 p. m. Mr. Taylor, E.E.I. Accounting Division chairman, opened the meeting, stressing the importance of informal discussion of the problems that all utility accountants have in common.

A. T. O'Neill, president, Buffalo Niagara Electric Corporation, then gave the attendants at the conference a hearty welcome to the city.

The first speaker on the program was Murray Shields, vice-president, Bank of Manhattan Company of New York. His topic was "America's Economic Outlook," or more specifically, to use his own title for his address, "Economic Guideposts for Business Planning." His view of the future was for the long run highly optimistic. However, he warned of danger signals such as price inflation, swollen inventories, a weak stock market, indications of consumer caution in spending, and diminished purchasing power of factory workers as well as of recipients of fixed incomes. All these signs point to a period of readjustment, the length and seriousness of which the speaker did not attempt to prophesy. However, he was very positive that after this phase is past the nation should look forward to some years of high productivity and wide distribution of goods which, together, will mean "another great upsurge in the American standard of living." He laid great stress on the technical advances made under the stimulus of war, the effect of which we have scarcely begun to realize.

Employee Relations

Merle Hale, Director of Salaried Personnel Activity, General Motors Company, spoke on "Employee Relations," with special reference to office workers. Mr. Hale said that the three imperative rules for the guidance of management in dealing successfully with its employees are: (1) treat them fairly; (2) pay them fairly; and (3) see that each employee is physically, mentally, and temperamentally qualified for the job he holds. Periodic salary surveys and inventories of personnel, comparable to inventories of physical property were among the speaker's recommendations for putting such rules into effect. Personnel inventories of the type recommended should be used principally in forecasting manpower requirements and planning accordingly. Labor-management relationship is a two-way street, according to Mr. Hale, and both sides must be made to realize it. A company's best asset is a good employee, but equally, an employees' best asset is a good job with a good company.

The subject of Employee Relations was further developed by E. R. Eberle, Public Service Electric and Gas Company of New Jersey, who outlined briefly a report on Supervisory Training which had been prepared by a joint subcommittee of the Customer Activities group, together with a sub-committee of the two General Accounting Committees and in cooperation with the A.G.A. Personnel Committee and the E.E.I. Industrial Relations Committee. The report, which was printed and distributed, called supervisory training the "Keystone of Good Employee Relations." It discusses the importance of supervisory training in general terms and then proceeds to a thorough and interesting analysis of training programs as described by 68 companies in replies to a questionnaire sent out by the committee. In a footnote to the report the joint sub-committee "desires to extend special recognition to E. R. Eberle, Public Service Electric and Gas Company of New Jersey, for his exceptional contributions to the preparation of this report."

Accountants and Management

The concluding address at the General Session was a talk by J. V. Toner,

president of Boston Edison Company, on "The Accountant's Place in Management." This was billed on the program as "A Challenge to Each of Us," and Mr. Toner, himself a highly successful accountant not only in the public utility field, as well as a widely experienced executive, made the accountants feel that while their contribution to the success of utility enterprises had been great, there is much more that they can and should do. Not the mere assembling of facts and figures, but their interpretation for the guidance of management, should be the accountant's responsibility, in Mr. Toner's opinion.

The General Session was brought to a close with a few appropriate remarks by co-chairman Leith V. Watkins, who thanked all the speakers and drove home one or two of the most pertinent thoughts that had been offered.

Committee Reports

On Tuesday morning those in attendance at the conference met in four separate groups representing four major features of accounting activity: General Accounting, Customers Activities, Materials and Supplies, and Taxation.

At the General Accounting session, presided over by H. B. Hardwick, chairman E.E.I. General Accounting Committee, and H. D. Borger, chairman of the corresponding committee of A.G.A., the first part of the program was devoted to summarized reports of committee activities.

A. W. Hastings, chairman E.E.I. Committee on Depreciation Accounting, reviewed the work of his committee during the year and its program for continuing research. He emphasized the vital importance to the industry of depreciation accounting which he said is a management problem, not a purely technical one to be turned over to "a so-called expert off in a corner." He likewise pointed out that recent studies of mortality characteristics of utility property seem to indicate a "reserve requirement," even on a "straight line" basis, much lower than has been generally calculated by proponents of "straight line" accruals. He mentioned approvingly the just published book by L. R. Nash, a member of his committee, entitled "Anatomy of Depreciation," although he said that not all members agreed with Mr. Nash's conclusions in their entirety.

A. J. Mayotte, Consumers Power Company, presented a brief report of the joint work during the year to date of the E.E.I. Committee on Plant Accounting and Records and the A.G.A. Committee on Property Records.

Report of R. P. Kaesshaefer, chairman of the E.E.I. Committee on Application of Accounting Principles, was presented by H. H. Scaff, a member of his committee, since Mr. Kaesshaefer was unable to be present.

A report was presented by R. N. Benjamin, Epsco, Inc., of an E.E.I. committee which is trying to bring about a simpler and more uniform arrangement of provisions in mortgage indentures, particularly those provisions that concern the accountants. Mr. Benjamin and his committee recognize that their job is a long term one and that progress at best will be slow. However, they believe that it is possible to lighten greatly the burden of the accounting department merely by rearranging some of the usual provisions in mortgage indentures and promulgating standard definitions of the terms most commonly used.

A. M. Hartogensis reviewed the work of the joint committee which is considering proposals made by A. R. Colbert of the Wisconsin Public Service Commission for a revision of operating expense accounts in the NARUC uniform Systems of Accounts. Mr. Colbert would reduce the number of expense accounts by about one-third, clarify the text, and greatly increase the illustrative item lists. His idea is to work this up first for the Wisconsin Utilities and later induce the NARUC Committee on Accounts and Statistics, of which he is a member, to recommend a similar revision for adoption by all regulatory commissions. The joint committee is at present cooperating with a committee of the Wisconsin Utilities Association, but it is unlikely that any definite changes will be submitted to the industry as a whole for some months to come and perhaps not for another year.

B. S. Rodey, Jr., Consolidated Edison Company of New York Inc. reviewed the work of a sub-committee on Preservation and Destruction of Records, pointing out that its efforts had had considerable effect in producing the recommendations of the NARUC Committee on Accounts and Statistics last year for a revised retention schedule much less burdensome than the one previously recommended and adopted by many state commissions. Mr. Rodey emphasized the cumulative increase in the burden of storing and preserving useless records and said that the subject of his committee's work might well be said to be "the orderly destruction of records." In other words, he felt that the industry at present is much more interested in getting rid of useless records than it is in the preservation of those which do have a definite permanent value. There is some hope that the relief already recommended by the NARUC Committee will be further extended in the not too remote future.

Following Mr. Rodey's report, R. E. White, assistant manager, Photograph Records Division, Remington Rand, Inc., gave a demonstration of the use of micro-photography in preserving records in a minimum of space.

Future Trends in Accounting

The session closed with a stimulating paper on "Future Trends in Utility Accounting and Financing" by Paul Grady, partner, Price Waterhouse & Company. Mr. Grady stressed the purpose of utility accounting and accounting control, the significance of accounting information for management, and the accountant's stewardship responsibilities. He did not mince words in dealing with what he characterized as departures from sound accounting principles by regulatory authorities anxious only to arrive at a low rate base. Speaking of plant Instruction 2 in the NARUC-FPC Uniform Systems of Accounts which would require a utility to keep its records so as to show *both* the original cost and the cost to the accounting company of utility property in service, he said that the FPC and the FCC have ignored the affidavits and the stipulation reaffirming this purpose in the American Telephone & Telegraph test case of 1937 and have required "arbitrary writeoffs of the difference between corporate cost and original cost." "Regardless of the fact," he said, "that their actions have been sustained by the Supreme Court, I believe that every utility should keep its property accounts in such a manner as will preserve the identity of its own cost of all tangible and intangible property having continuing value."

The Customers Activities Group had its usual lively session, presided over jointly by W. E. Sturm, West Penn Power Company, the E.E.I. Customers Activities chairman, and R. F. McGlone, East Ohio Gas Company, coordinator of the A.G.A. Customers Activities Group.

C. E. Rowe, Consumers Power Company, gave a paper "Looking to the Future in Collections." He believes that

there is room for improvement in electric and gas utility collection procedures, especially in the direction of greater flexibility and willingness to deal with individual cases in the light of the particular circumstances. Customer relations could surely be improved without sacrificing necessary promptness in the payment of bills for service.

F. J. Porter, Jr., Consolidated Edison Company of New York, Inc., in a paper entitled "Reflecting Customer Attitude Accurately to Top Management" reviewed the practices of 47 electric and gas utilities as developed through a questionnaire and presented some summarized conclusions. His paper recommends centralized control of a consistent and continuous effort to keep up to date on customer attitudes, with an individual or group authorized to supervize such inquiries, summarize and report results, and recommend changes in procedure where such appear necessary or desirable.

"Wrinkles" in Customers' Activities

A brief review of a report on "Wrinkles" was presented by A. G. Burnett, New York Power and Light Company. This report, which many now believe should be an annual feature of Customers Activities Committee work, brings together short cuts, devices, gadgets, and ideas, for improving quality and saving time in the performance of accounting routines.

An interim report on Meter Reading was presented by W. R. Seidel, Rochester Gas and Electric Company, which consisted of a bibliography of papers, articles, news items, etc., relating to meter reading, published in periodicals of the electric, gas, and water utility industries from 1921 to 1946, inclusive. This should be a most helpful reference.

The meeting closed with a panel discussion on "Accounting Records and Files" led by L. J. Rauh, Consolidated Gas Electric Light and Power Company of Baltimore, in the absence of W. A. Kelly of that company who was scheduled to lead. The exchange of ideas was lively and fruitful.

The Materials and Supplies Committee of the A.G.A. met Tuesday morning with its chairman, G. B. Herr, The Peoples Natural Gas Company, presiding, and continued throughout the day with a break for luncheon which the committee members present enjoyed together. The papers and reports presented and discussed included: "How Can Stores, Purchasing Departments and Operating Departments Best Serve Each Other?", H. G. Lawrence, Southern Counties Gas Company; "Determination of, Procedures Followed, and Accounting for Reclaimed Materials and Scrap," O. G. Peterson, New York State Electric and Gas Corporation.

The Tuesday morning meeting of the two Taxation Accounting Committees was devoted to informal discussion and exchange of ideas and experiences, presided over by the co-chairmen, W. S. Alt, Union Electric Company of Missouri, E.E.I., and C. H. Mann, Columbia Engineering Corporation, A.G.A.

On Tuesday afternoon members of the two General Accounting Committees, co-chairmen Hardwick and Borger presiding, heard reports from various project sub-committees. For the most part these reports were summaries, and where the projects had been subdivided and different aspects had been assigned to various individuals fuller presentation and discussion was deferred until the separate sub-committee meetings on Wednesday morning.

The first such sub-committee report was that of the Committee on Machine Applications for General Accounting which had for its co-chairmen J. F. Farley, New York State Electric and Gas Company, A.G.A., and C. J. Wardell, The Commonwealth & Southern Corporation, E.E.I. General Accounting Machine Installations for a group of companies having 40,000 retail customers were described by J. V. Colley, The Dayton Power and Light Company, and a system of punched card payroll accounting was outlined by J. R. Brown, Michigan Consolidated Gas Company.

A joint sub-committee on Budgets, co-chairman W. H. Zimmer, The Cincinnati Gas and Electric Company, EEI, and A. A. Cullman, Columbia Engineering Corporation, AGA, offered three papers: "The Value of Budget Procedures to the Utility Industry" by J. W. Mackie; "Preparation of the Original Budget," by W. H. Zimmer; and "Periodic Comparison of Actual Results with Original Budgets," by F. H. Crissman. The titles of these papers speak for themselves. All were received with considerable interest.

Internal Auditing

The joint sub-committee on Internal Auditing, whose co-chairmen are C. T. Atkisson, Ebasco Services Inc., EEI, and H. C. Johnson, Consolidated Natural Gas Company, AGA, presented descriptions of three types of internal auditing systems. These were: "An Internal Auditing Program of an Integrated Natural Gas System," J. M. Trant, Consolidated Natural Gas Company; "Internal Auditing Practice in the Consolidated Gas Electric Light and Power Company of Baltimore" by C. J. Nichols of that company; and "Organization and Practice of the Auditing Department of Consolidated Edison Company of New York, Inc.," by C. G. Nye of that company. The first two papers were read at the Tuesday afternoon General Accounting meeting, the third at a meeting of the Sub-committee on Internal Auditing on Wednesday morning. The three papers disclosed wide variations in the responsibilities of internal auditors and in the methods of internal check employed.

Functional Accounting

The report of the sub-committee on Functional or Responsibility Accounting was presented by J. E. Jackson, The Cleveland Electric Illuminating Company. It stated that while the kind of accounting with which the sub-committee attempted to deal was variously described as "functional accounting," "responsibility accounting," "cost accounting," etc., the majority of the sub-committee felt that "responsibility accounting" was the most descriptive term for what most managements are trying to do with it. Essentially it is a detailed classification of accounts to fit the individual organization's functions or activities, so set up as to match costs with individual responsibilities (or specific activities) in order to give management better knowledge and therefore better control of every activity or individual responsibility. The report referred to four different systems of functional or responsibility accounting which were later described and discussed at a meeting of the sub-committee on Wednesday morning. These four systems with the name of the company's representative who presented each, were those of: (1) Consolidated Gas Electric Light and Power Company of Baltimore, by O. K. Boyd; The Detroit Edison Company, by L. C. Provencher; Philadelphia Electric Company, presented by W. C. Smith for G. V. Buck, Jr.; and New Orleans Public Service Inc., by F. J. Labanca.

A. T. Gardner, Delaware Power and Light Company, presided at the Wednesday morning sub-committee meeting and introduced the speakers.

The Customers Activities group held

a series of luncheon conferences Tuesday afternoon beginning at 12:30 and continuing until those participating were talked out. These conferences were informal discussions without set papers or reports. Some of the topics scheduled for consideration were: Customer Accounting—"Wrinkles" (a report previously described) with an exhibit of special devices, and "Pro-rating of Irregular Period Billings"; Customer Relations; "Convincing the Public We Are Not 'Pay Up or be Cut Off' People" and "Collections Through Outside Service Groups"; Customer Relations—"Customer Attitude Toward Billing Without Meters," "Customer Accounting Forms From A Customer Relations Viewpoint," and "Saturday Closing of Business Offices."

Taxation Accounting

The Taxation Accounting Committee at a meeting on Tuesday afternoon, presided over by Messrs. Alt and Mann, listened to a talk by Thomas N. Tarleau, Partner, Willkie, Owen, Otis, Farr & Gallagher on "Taxation and Fiscal Policy." Mr. Tarleau spoke without notes. He dealt with the federal budget and present Congressional procedure in its consideration as compared with that of earlier periods. He also discussed the recommendations of the Tax Foundation, most of which he thought were sound. He expressed the opinion that the budget could be balanced during the present year without too drastic curtailment of necessary appropriations and with some relief to taxpayers. Mr. Tarleau answered a number of questions from the floor about his subject, as well as on recent cases under Section 722 of the Revenue Act.

At the Tuesday afternoon joint session of the EEI Plant Accounting and Records Committee, chairman A. J. Mayotte, Consumers Power Company, and AGA Property Records Committee, L. E. Nash, Middle West Service Company, chairman, Mr. Mayotte presented a paper on "Coordination of Property Records With General Accounting, Operations and Engineering Activities," originally prepared by the Property Records Committee of the Pennsylvania Electric Association, which was appreciatively received. E. D. King, The Detroit Edison Company, presented a paper on "Accounting for Salvaged Equipment and Major Spare Parts Items." This included an analysis of varied practice among thirty-one companies and recommendations for a standard procedure with special reference to salvaged equipment which cannot be disposed of within a reasonable time after its removal from service.

The Depreciation Accounting Committee of EEI met Tuesday afternoon, chairman A. W. Hastings, Epsco, presiding. The principal subject for discussion was "The Simulated Plant Record Method of Determining Past Life and Mortality Dispersion From Plant Records," a paper presented by A. E. Bauhan, Public Service Electric and Gas Company. Mr. Bauhan has developed a relatively new and heretofore little used method of analyzing past experience with service lives of mass property and has drawn some conclusions about the probable effect of mortality dispersion which can have a very significant influence in establishing the practical requirements for a depreciation reserve. In the discussion of this paper Henry R. Whiton, Gulf States Utilities Company, described a variation of Mr. Bauhan's method which he calls "The Indicated Retirement Approach," and P. H. Jeynes, Public Service Electric and Gas Company spoke briefly about still another variation which he calls the "Indicated Renewals Approach." It is to be noted that all papers deal with the analysis of past experience. None of them pretends to give the answer to what future depreciation accruals ought to be or to be more than a guide to management in determining sound depreciation accounting policy.

W. B. Carr, Buffalo Niagara Electric Corporation, read a paper on "The Effects of Dispersion in the Depreciation Problem" in which he offered some interesting mathematical studies on the incidence of property retirements and the corresponding distribution of depreciation charges.

Tuesday Dinner Session

On Tuesday evening there was an informal dinner session attended by approximately 600. Guests of Honor included H. S. Bennion, managing director, Edison Electric Institute; H. Carl Wolf, managing director, American Gas Association, and O. F. Flumerfelt, president, Iroquois Gas Corporation. Some of the guest speakers at the daytime sessions of the conference also sat at the speaker's table. These were Paul Grady, Ralph White, and T. N. Tarleau. Messrs. H. P. Taylor and Leith V. Watkins presided jointly.

The speaker of the evening was not announced beforehand, but proved to be Charles W. Summers of Buffalo, a professional entertainer who was introduced as a distinguished foreign visitor. He started out in a serious vein but in a few minutes had his audience in laughter which increased as the speaker feigned confusion, made what seemed to be numerous slips, and finally confessed that he was not what he seemed. All agreed that the dinner was a successful entertainment and an agreeable interlude in the more serious sessions of the conference.

Wednesday morning was given up to individual committee meetings. At the meeting of the sub-committee on Machine Applications for General Accounting, presided over by Messrs. Wardell and Farley, there was some informal discussion of new applications.

Committee Meetings

At the meeting of the sub-committee on Budgets, co-chairmen Zimmer and Cullman, the two papers by Messrs. Colley and Brown presented at the Tuesday afternoon General Accounting Committee meeting were discussed in detail. It was stated that the papers presented were to be considered parts of an "Interim Report" and that it is planned to complete fuller discussions of the subject before October.

The sub-committee on Internal Auditing heard a paper, already referred to, by C. J. Nye on the procedure of the Consolidated Edison Company of New York, and consumed the morning in an animated discussion of this and the other two papers prepared by members of the sub-committee.

The sub-committee on Functional or Responsibility Accounting heard the four papers or reports mentioned in a report of the sub-committee chairman on Tuesday afternoon, and discussed them to the advantage of all concerned.

A special sub-committee of the EEI General Accounting Committee met Wednesday morning to discuss some of the problems involved in "Licensed Projects Accounting," more particularly those connected with the determination of net earnings during the twenty years between the date when the license for hydro-plant construction is issued by the Federal Power Commission and the date when the project under the Federal Water Power Act becomes subject to "recapture." No papers or reports were pre-

(*Continued on page* 168)

The Accountant's Place in Management—A Challenge to All of Us

By J. V. Toner
President, Boston Edison Company

An address before AGA-EEI Accounting Conference, Buffalo, N. Y., April 7, 1946

THE subject of my address to you, "The Accountant's Place in Management—A Challenge to All of Us," was selected for me by your committee, and I am pleased to present to you the affirmative side of this subject. It may also have a negative side, but I hardly think that this would be either an appropriate or a safe place to present that side.

Time does not permit me to give the historical origin and development of accounting from its origin in Venice in 1494 up to the present date. It is significant that throughout history, the development of accounting and accountants was the greatest in those countries which were preeminent in commerce and industry. The development of accounting in this country in the past fifty years corresponds with the phenomenal growth of our country in business.

Unquestionably, much of the growth in accounting since 1909, the year the first income tax law (and excise tax) was passed, has been due to the requirements of the various tax laws and the other requirements of government agencies. However, much credit also must be given to the accountants and the various accounting societies of this country for recognizing in accounting something beyond the recordative functions for which it was originally founded, and developing it as a vital force in the management and control of business.

Qualifications of an Accountant

Recently, I received a letter from a college classmate, asking me what were the important qualifications of an accountant. My answer to him was as follows: "The basic qualifications of an accountant, private or public, are in addition to the broadest general education and a thorough knowledge of the principles and procedures of accounting, a general knowledge of business law, to enable him to appreciate the legal significance of the legal aspects of business; a familiarity with tax laws and business regulatory laws; a thorough knowledge of the principles of economics, finance, and management; mathematical ability or figure sense; and above all, a genuine liking for and interest in accounting." I mention this to indicate what the accountant's background should be in order to serve best in broader management positions.

In the past 40 years the colleges and schools have done a very creditable job in educating young men and women for accounting. While emphasis has been put on accounting subjects in these courses, yet the courses which tend to give depth and breadth of viewpoint have not been neglected. With such training, graduates not only make better accountants, but in recent years have been taken into management in increasing numbers, to function not as accountants, but in general managerial capacities.

Purpose of Accounting Records

The first interest of an accountant in any business, is the installation of a system of accounts which will correctly and economically record all the transactions. This record must be complete, accurate, and sufficient to serve not only as a history of the business, but it also must be constructed so that it will show the financial condition of the business at any time, and the periodic results of operation. It must serve also as a basis for the preparation of tax returns and all the other reports required under today's conditions, by all the governmental and other agencies.

Accountants generally, and the accountants in the utility industry particularly, have done a wonderful job in the recordative function of accounting. They have been alert to take advantage of every development that would improve the record or cut the cost; they have been ingenious in the development of internal checks and controls to prevent or to detect errors or irregularities of any sort; and they have set up the record so that the financial statements, tax returns, and other reports can be prepared most readily.

Unfortunately, over the years, the accountants have emphasized that the be-all and end-all of the accounting record was to disclose the true net worth and the correct operating profit for the period, with too little emphasis on the value of the interpretation of the figures prepared from the record for the purpose of evaluating the efficiency of the management, or the soundness of the policies. Likewise, not enough emphasis has been placed on the story told by figures in planning for the future.

With little or no additional expense, the figures from the accounting record can be and should be broken down, presented and interpreted so that they will reveal for management the efficiency or inefficiency of operation, significant trends in the business, and their causes; the soundness or unsoundness of financial and other policies, and reveal for management the basis for future planning.

To illustrate one use of figures most useful to the financial management, let me cite the "Statement of Application of Funds," a copy of which I have here. This statement explains the source of all the funds coming into the business and the disposition of these funds.

The interpretation, analysis and presentation of the figures for use of management is the real test of the calibre and breadth of gauge of the accountant. He must convey to the management, in a manner easily understandable by the management, just exactly what the figures indicate or portend. Too often an accountant makes his analysis or interpretation in the form of schedules of columnar figures and expects management to get from these schedules the story they tell the accountant. This is why too many times the schedules find their way to the waste basket or are pigeon-holed in the dead files.

Statement of Source and Application of Funds

For the Year Ended December 31, 1946

Funds provided:			
Income for the year:			
Income balance, per statement of income		$5,214,146.89	
Add:			
Charges to income not requiring funds:			
Depreciation - regular	$5,381,168.24		
Depreciation - automobiles	61,949.06		
Write-off of bond refinancing charges	81,784.32		
	5,524,901.62		
Deduct credit to income not requiring funds:			
Amortization of bond premium less expense of issue	52,631.04	5,472,270.58	$10,686,417.47
Surplus credit representing adjustment of prior year federal income tax provision			102,417.48
Salvage values assigned to property retired, credited to reserve for depreciation		194,227.08	
Less cost of removal of plant retired		172,261.99	21,965.09
Contributions for extensions			10,906.33
Total funds provided			$10,821,706.37
Funds applied:			
Additions to plant investment			$ 3,848,827.32
Payment of dividends			5,288,706.84
Net increase in other investments			97,900.00
Increase in working capital and deferred charges, per accompanying statement			1,586,272.21
Total funds applied			$10,821,706.37

Schedule of Changes in Working Capital and Deferred Charges

For the Year Ended December 31, 1946

	December 31, 1946	December 31, 1945	Changes in Working Capital Increase	Changes in Working Capital Decrease
Current assets:				
Cash in banks and on hand	$ 5,023,027.72	$ 3,800,249.28	$1,222,778.44	
United States Treasury Tax notes	3,300,000.00	3,504,400.00		204,400.00
United States Treasury certificates of indebtedness	1,000,000.00		1,000,000.00	
Accounts and notes receivable, less reserve	3,755,556.26	4,147,144.59		391,588.33
Materials and supplies	2,994,054.13	2,929,099.15	64,954.98	
Merchandise for resales	15,750.54	35,240.53		19,489.99
Other current assets	244,874.17	233,454.28	11,419.89	
Total current assets	$16,333,262.82	$14,649,587.83		
Current liabilities:				
Accounts payable	1,324,685.28	1,396,454.51	71,769.23	
Dividend declared	1,234,328.00	1,234,328.00		
Provision for tax liability	6,989,836.88	6,812,838.08		176,998.80
Interest accrued	134,616.06	132,950.19		1,665.87
Consumers' deposits	603,006.00	486,750.00		116,256.00
Employees' savings deposits	548,619.28	505,071.58		43,547.70
Other current liabilities	69,107.27	111,937.40	42,830.13	
Total current liabilities	10,904,198.77	10,680,329.76		
Working capital	$ 5,429,064.05	$ 3,969,258.07		
Increase in working capital				1,459,805.98
			$2,413,752.67	$2,413,752.67
Deferred charges:				
Prepaid accounts	284,151.43	154,095.12	130,056.31	
Other unadjusted debits	24,023.54	27,613.62		3,590.08
Total deferred charges	$ 308,174.97	$ 181,708.74		
Increase in deferred charges				126,466.23
			$ 130,056.31	$ 130,056.31
Increase in working capital			1,459,805.98	
Increase in deferred charges			126,466.23	
Increase in working capital and deferred charges			$1,586,272.21	

Accountants must psycho-analyze the management they are working with or for, and present their analyses and interpretations with due regard to the mentality, the habits, the idiosyncracies and training of the particular management. Some like written presentations; some like oral ones; some like graphs; some like conclusions only; others like a lot of detail, and so on. In any event, find out what management wants or determine for management what it needs and then serve it in a way that is digestible for that particular management. Ask yourself continuously, "If I were manager of this business or any part of it, what figures or facts would be of assistance to me in my operation?" Certainly, if you cannot answer this question for yourself as an accountant, you cannot be very helpful to a manager who hasn't the least idea how he can control or manage through the accounts.

Salesmen usually get the credit for creating the income of business, but I say to you that if you can make the accounting records of a business serve as an instrument for increased efficiency and economy in the operations of the business, then you are making the accounting a source of income. What you

save by efficiency and economy of operation goes down into net without further deductions, whereas what the salesmen bring in must be reduced by the cost of sales or costs of production, and all the other expenses before it reaches the net profit. The old adage, "A dollar saved means a dollar earned" does not apply to these days of reduced profit margins. Today, a dollar saved by efficiency or economy of operation may be worth five or ten dollars in increased gross.

The accountant from his training and his close and continuous contact with the figures, has an insight into the business which should make his viewpoint most valuable in either evaluating the past or in planning for the future. This viewpoint should be sought by management, but if management itself does not request it, the accountant should take the initiative and present this viewpoint in an understandable way.

I do not believe that the accountant has any real limitations on his scope of activity within a business. Anything or everything that the figures reveal, irrespective of the department affected, should be brought to the attention of management in the proper way. This includes industrial relations, rate structures, public relations, and an accounting appraisal of technical additions and improvements.

Accountants in a regulated business should never accept the thesis that it is futile to cut costs because the regulatory authorities will take the savings away by rate cuts. Rates that are high because of inefficiency in management will be cut eventually anyway, and it certainly does not add to the prestige of the industry or to the credit of management to have the regulatory authorities force the companies to put into effect savings which the management should have done on their own initiative.

The engineers in the utilities have set an admirable example, in their patient and ceaseless activity to improve technical operation. They never have been satisfied, they never have become complacent, but they have continuously sought for and attained better and more economical technical operation. If accountants would direct their training and knowledge to the problem of general management, with the same persistency, with the same enthusiasm, and with the same intelligence, the industry would have higher esteem with the public, with the regulatory authorities, and with the stockholders. Efficiency of management is now the only hope of either cutting costs or maintaining present rates.

American business is now entering the most critical and complex period in history. It is critical because its success or failure is going to determine whether free enterprise will continue or whether some form of collectivism will take its place.

This period is complex because we are emerging from a period of almost 15 years which has been a heterogeneous mixture of free economy and regulated economy, capitalism and communism, shortages and surpluses, high volume and low profits, rugged individualism and paternalism, and many other contradictions. Not only have the high costs of the non-competitive war production been carried over to peacetime products, but at least two general wage increases have been added thereto since V-J day; and in addition there has been an enormous decline in production per man-hour over pre-war periods. Add all of these together and put them beside the communistic drive to maintain prewar prices, and they certainly add up to complexity to say the least.

Most of you are representatives of regulated businesses, that is, businesses which must show good cause before they can increase their prices or rates. Since 1941 labor costs have increased more than 50 per cent; fuel costs doubled; materials and supplies have increased 25 per cent or more, and yet prices for your products are in most cases lower than in 1941.

Some of these increased costs have been offset by increased loads or improved load factors; some of them have been offset by increases in efficiency in the production, transmission and distribution of your products, brought about by the brains and toil of our engineers; and some of these increased costs, even though they are increased costs of the rendition of services, have been charged against the equity interests of your companies.

As I see the future picture, management not only in public utilities, but also in general business, is going to be beset with problems, the solution of which will require the best trained minds available. Accountants have one of the best overall viewpoints, not only of the particular business, but also of the entire economy, and should therefore be able to make valuable contributions in the solution of these problems.

The inherent characteristic of accounting is balance or equation. The accountants can offer this fundamental characteristic of balance to management of the utilities, to the end that balance between its obligations to the public in the form of fair and reasonable rates shall be maintained; to their employees, that fair and reasonable compensation be paid to employees; and to their investors, that the rates of return shall be fair and reasonable and such as will draw capital for future expansion.

There is a place in management for accountants; management needs you now as never before, but the place you obtain is squarely up to you. You have demonstrated that you are good accountants. Now it is up to you to demonstrate that your training and experience as accountants, qualifies you pre-eminently for broader general management responsibilities.

Maryland Utilities Association Meeting

THE annual meeting of the Maryland Utilities Association was held in Baltimore, April 25, 1947. Registration showed over 400 representatives from gas, electric and transportation companies and allied manufacturers operating in the State of Maryland.

Speakers at the meeting were: H. Carl Wolf, managing director, American Gas Association; Claude M. Gray, president, Baltimore Transit Company; B. R. Prentice, assistant to vice-president, General Electric Company; and Dr. Ralph L. Lee, public relations department, of the General Motors Corporation.

The following Officers and Directors were elected for the ensuing year: Charles P. Crane, executive vice-president, Consolidated Gas Electric Light & Power Co., president; Adrian Hughes, assistant to the president, Baltimore Transit Company, vice-president; J. Carl Fisher, manager, general service, Consolidated Gas Electric Light & Power Co., treasurer; and Raymond C. Brehaut, manager of Suburban Companies, affiliated with Washington Gas Light Co., secretary.

Trends in Utility Accounting and Financing

By Paul Grady
Partner, Price Waterhouse & Co.

A speech presented at the Joint National Conference of Electric and Gas Utility Accountants, Buffalo, N. Y., April 7-9, 1947

An adequate handling of either accounting or financing would require a longer time than is compatible with comfort. The voice of wisdom counsels that financing should be dropped from the subject, but that advice has been overcome by deep personal interest and conviction with regard to certain current trends in the broad field of utility financing. The wide scope of the discussion will necessitate curtailed comments on many accounting points but I am sure they do not require detailed treatment in this forum.

Purposes of Utility Accounting

I assume we are all in agreement that accounting is not an end in itself, but that it is an indispensable service function directed toward establishing a dependable records control over the assets and operations of an enterprise and supplying essential information required by officers and directors for purposes of management of the business which includes the fulfilment of relationships and responsibilities to governmental bodies and other organizations or groups having legitimate interests. A more detailed, although not necessarily all-inclusive, statement of the primary purposes, or uses, of utility accounting is the following:

1. Maintenance of accounting control over assets, liabilities, revenues and expenses.
2. Supplying information required by officers and directors for the operating and financial management of the business.
3. Accounting and reporting to investors and creditors on stewardship responsibilities.
4. Supplying information required by management and by governmental bodies for rate-making and other regulatory purposes.
5. Supplying information required by management and by governmental bodies for tax purposes.

The present trend in utility accounting, in general, is toward the more effective fulfilment of the foregoing purposes. This, of course, must always be true if the corporate accounting and public accounting forces of the country reasonably meet their respective responsibilities. Naturally, there are wide variations in the efficiency and effectiveness of accounting as between individual units in any industry. I shall attempt to set forth certain standards of performance in subsequent paragraphs and shall leave each of you to judge the extent to which your own company is realizing the full potentialities of the accounting function.

Accounting Control

It is now generally recognized that the administration of the affairs of any enterprise and the integrity of its accounts are, to a considerable extent, dependent upon an adequate system of internal control. Such control is sometimes viewed too narrowly as relating primarily to the safeguards for the handling of cash and securities. Actually it extends to all phases of the business and should be regarded as a system of checks and balances whereunder persons charged with responsibility for custody of assets and operations have no part in keeping the accounts, and those having responsibility for keeping the accounts have no part in the custody of assets or conducting operations. Within this broad system the duties of various individuals should be so divided as reasonably to guard against continued irregularities and falsification of accounts by any one individual, and to reduce the possibility of collusion to a practicable minimum.

The establishment and maintenance of satisfactory internal check is obviously one of the principal elements in effective accounting control over the assets, liabilities, revenues and expenses. And it can be accomplished only by the continuous efforts of adequate and competent personnel working within a logical and clearly defined plan of organization.

Those responsible for the accounting function must, of course, consider the plan of organization for executive and operating departments in order that the accounting department's plan of organization and procedures may be appropriately geared to the general plan. This would include such matters as extent of centralization or decentralization as well as establishment of the appropriate counterparts of accounting or records control to match the custodianship and operating responsibilities of the other departments. This does not mean that the accounting official will "write the ticket" on the plan of organization or division of duties in the other departments, but he should point out to the chief executive or directors any situations which invalidate or endanger the effectiveness of internal control.

There are wide opportunities for improvement in organization planning in many corporations. Organizations are sometimes allowed to grow in a "hit or miss" fashion with insufficient recognition of basic functions or logical groupings of activities. In such cases there will probably not be a clear understanding as to the functions and responsibilities for each department or for individual executives, which is bound to have an adverse effect upon results of operations. If confronted with this situation the accounting executive has the responsibility of making corrective recommendations to top management, of placing his own house in order by creating a definite written plan of organization and of determining through administrative supervision that the accounting department operates in accordance with the plan.

In addition to organized and trained personnel, accounting control requires a well designed system of accounting procedures. It is unnecessary to discuss this subject in any detail. However, I would like to suggest that there is room for much progress in the development of understandable procedures manuals. A fairly large percentage of companies have not undertaken the development of such manuals. Unfortunately, in many cases where such manuals have been prepared, they have been allowed to become so detailed and cumbersome that their usefulness has been greatly impaired and their reputation has suffered accordingly. I believe that if the procedures manuals

are prepared in the reasonable detail dictated by common sense they can serve a most useful purpose in increasing the efficiency and effectiveness of the accounting operations. In this connection flow charts are a very useful method of presenting the flow of record-keeping between departments and sections. Such charts, together with illustrated samples of the accounting forms in use, make it possible to keep detailed description of the procedures on a minimum basis.

The final step necessary to accounting control of the utility is effective internal auditing, which ensures that procedures are being carried out in accordance with instructions. This phase, I am sure, requires no advocate among accounting officials. It should be pointed out, however, that internal auditing has been seriously curtailed during the past several years by many companies, not by choice but by necessity, due to extra burdens such as "original cost" safaris and to the war-time personnel shortage. With the return to more normal conditions measures undoubtedly will be taken to place an adequate staff of internal auditors on their customary assignments. In this connection, it is a grave mistake to use the internal auditing staff as the flexible reservoir of the accounting department to handle most of the extraordinary projects which arise. Effective internal auditing requires careful advance planning of a program of work, the incidence and timing of which should not be interrupted.

Information for Management

Effective executive administration requires the establishment of planned yardsticks or standards, the measurement and reporting of performance, and the prompt initiation of corrective action. Planned yardsticks or standards are usually effected by means of a budget, and the measurement and reporting of performance are accomplished through regular operating and financial reports, both of which are products of the accounting process.

In industrial enterprises, the classifications of accounts are ordinarily designed in coordination with the plan of organization in order to furnish significant information in terms of the location of responsibility and functions by departments. Utilities, on the other hand, are required to maintain prescribed uniform systems of accounts which do not produce all of the essential information required for executive control. This has necessitated the development of further information for inclusion in special reports. In some cases such information is compiled by analysis of payrolls, materials and supplies and other costs by appropriate divisions and departments. In other cases comprehensive cross-sectional classifications are regularly maintained to present the essential information in accordance with the responsibilities and functions as allocated in the plan of organization.

Before passing on to the next phase of utility accounting I should like to present the following suggestions:

First—If, as a result of your studies, you are convinced that a different classification of operating accounts would meet the requirements of responsible accounting, you should initiate action to obtain the adoption of such revised system by the N.A.R.U.C. Certainly such a system would meet the needs of the Commissions and would eliminate the expense and complication of cross-sectional classification of expenses.

Second—Operating and financial reports should be critically reviewed from time to time, to determine the value, adequacy and timeliness of the data furnished. From the standpoint of economy of executive time, reports should be assembled on a selective basis in order that a particular executive is not burdened with data for which he has no direct interest and responsibility.

Third—Devote a greater proportion of your efforts toward furnishing significant analytical and interpretative comments. By doing so you will greatly facilitate the understanding of the budgetary and performance data on the part of the executives and will speed up the initiation of corrective administrative action.

Stewardship Responsibilities

Two of the major developments in the economic or business structure of our country since the beginning of the Twentieth Century have been the use of the corporation as the prevalent form of business organization and the separation of business ownership from the active managements. These developments have greatly increased the need for adequate reports by management in accounting for its stewardship in utilizing the capital placed in the enterprise by the investors. Certainly in any economy predicated upon concepts of private enterprise, stewardship reporting must be regarded as the primary purpose of financial accounting. It has been dealt with in this paper as the third purpose, solely because it seemed more logical to discuss the internal purposes or uses of accounting before proceeding with those involving external considerations.

The utilities, in common with other industries, have long recognized the importance of clear and informative reports to creditors and stockholders. Furthermore it has been recognized that an independent examination of the financial position and results of operations is a practical and essential protection to the investing public. This has been the basic cause of the development of the independent public accounting profession in countries having private enterprise economic systems. I have not heard of any great need or desire for independent accounting services or of stewardship reporting in totalitarian countries where productive properties and processes are owned or dominated by government.

The generally accepted basis of accounting for the utilization of capital from a stewardship viewpoint is cost to the enterprise. This premise is in accord with the uniform systems of accounts promulgated by the N.A.R.U.C and by the federal regulatory commissions. However, in recent years the Federal Power Commission and some other commissions which have followed its lead, have departed from generally accepted and sound accounting and from their own system of accounts in such a manner as to destroy the identity of the utilities' cost and thereby prevent proper stewardship accounting to the owners of the business.

Objectivity Needed

It is unfortunate that the fervor of attaining certain rate regulation objectives should be allowed to bring about these departures. Actually, there is no legitimate reason for any conflict between regulation and accounting. It is quite obvious that no one set of figures can meet all of the general and special purposes of business, its investors and various governmental agencies. If we are to maintain a private enterprise system, cost to the corporation should remain the basis for the primary financial accounts in order to provide a proper accounting for stewardship. To the extent that other purposes require additional information it must be obtained by memorandum accounts or by subdivisions of the accounts as illustrated by the "original

cost" plant accounts in the present uniform system. We must find means of impressing upon regulatory authorities, the courts and legislatures the grave danger in changing accounting from its natural field of objectivity and general usefulness to a single-purpose instrumentality or, worse still, to a perverted field of advocacy and propaganda for preconceived rate-making or social objectives.

Accounting for Rate-Making

Practically all of the problems in rate-making have to do with cost and value of utility fixed capital, the ascertainment of accrued depreciation and of the current annual provision therefor, and the fixing of an allowable return on the rate base. It is not necessary to review the developments of the last several years in rate-making theories and policies, but, in the light of such developments, I should like to present as briefly as possible certain suggestions as to the objectives to be accomplished in property and depreciation accounting in order to fulfill all requirements of stewardship, rate-making and taxes.

As previously stated the present uniform systems of accounts are not contrary to generally accepted accounting principles. As a matter of fact, Plant Instruction Number 2 of the electric system provides the the utility shall carry out a classification of its plant accounts in such manner as to show both the *original cost* and the *cost to the utility* of its electric plant. It is refreshing, in the light of subsequent happenings, to re-read the several affidavits filed by the chief accountants of various commissions in the American Telephone and Telegraph Case in 1937, affirming that the original cost requirements were merely a reclassification and that the total corporate costs of properties were not affected. We likewise recall the stipulation filed by the Attorney General on behalf of the Commission stated that legitimate costs of useful properties would not be written off and that adequate allowance would be made for depreciation of the investment in depreciable properties. Regardless of the fact that the Federal Power Commission and the Federal Communications Commission have ignored the foregoing affidavits and stipulation and have required arbitrary writeoffs of the difference between corporate cost and original cost, and regardless of the fact their actions have been sustained by the Supreme Court, I believe that every utility should keep its property accounts in such a manner as will preserve the identity of its own cost of all tangible and intangible property having continuing value. Investment in fixed assets is of such predominate significance to utilities that, in most instances, property records should be designed to fulfill the following objectives:

1. Land records should show appropriate description, including location, dates of acquisition, cost to the utility, and "original cost."
2. Tangible depreciable property records should show cost to the utility and "original cost" by classified accounts and by reasonable units of property. The unit records should indicate reasonable location and age data in addition to the cost information.
3. Joint accounting and engineering analyses should be maintained to show current unit costs of construction in order to facilitate prompt preparation of cost of reproduction estimates of value. The recent decision of the Ohio Commission in the case of The Cleveland Electric Illuminating Company demonstrates the feasibility and advantages of this method. In addition to the avoidance of delay, it seems to me that such a method provides clearer documentation proof based on the cost experience of the particular company.
4. Life curves should be maintained to demonstrate depreciation reserve and annual depreciation provision requirements by reasonable classes or groups of depreciable property based upon past mortality experience.
5. Records should be maintained to show the "original cost" and cost to the utility of all intangible fixed capital items of continuing value. Such records should show the character or nature of the items, how the cost was determined and the particular property acquisition wherein the cost was incurred.

The Problem of Depreciation

There is no need to elaborate on the first three of the foregoing objectives except incidental to the subsequent discussion of intangible costs and property acquisition adjustments. With regard to the fourth point, depreciation, it is recognized that there is sufficient area for widely divergent viewpoints. Regardless of the particular views you may hold as to the appropriate method of depreciation for either financial or rate-making purposes, I believe it is very much in the interest of utilities to maintain the necessary information to permit actuarial proof of depreciation requirements.

Many commission witnesses, who may not have had an opportunity to make a comprehensive study of the history of the particular properties, are inclined to over-estimate the depreciation reserve requirements because they do not give proper weight to the effect on the reserve of earlier than average mortalities in the respective groups of depreciable properties. Fully supported actuarial computations are the most effective method of demonstrating whether such errors exist. The life curves for the various groups of property may be based either on the aging of property retirements or on the ratio of aged dollars of investment remaining in service to the total investment originally installed in the various years. The actuarial computations should, of course, be supplemented by competent engineering judgment.

Property Acquisition As Capital Cost

The foregoing suggestions regarding the accounting for that portion of the cost of tangible properties and intangibles included in property acquisition adjustments is considerably at variance with concepts identified with the Federal Power Commission. Contrary to the way I read the uniform system of accounts, that commission seems to discourage the separate identification of the portion of the property acquisition adjustment account representing investment in tangible properties and that representing intangibles. The Commission has taken the position in most instances that the entire property-acquisition adjustment account should be written off to surplus immediately or should be amortized by charges below the "net earnings" line over a relatively short period of years.

The whole history of integration and development of the utility industry in the United States, including principles of rate-making, followed by the courts and commissions, and the changes in the purchasing power of the dollar, support most of the acquisition costs as representing legitimate capital costs of economic integration. In most cases the prices paid were justified by the conditions existing at the time, many of them being specifically approved by regulatory authorities,

and the public interest was well served by cheaper and more dependable service. The actual cost to the utility of its tangible and intangible fixed assets is a matter of permanent significance to security holders, to regulatory authorities and to the public. While regulation does not assure a return on investment it should permit a reasonable opportunity to earn a return at a sufficient rate to constitute an adequate reward for the risks assumed in establishing the enterprise. This opportunity of reward necessarily extends to all capital costs, both tangible and intangible, devoted to the public use. The use of an "original cost—less straight-line depreciation reserve" rate base with a current market value rate of return results in the confiscation, at the minimum, of the additional capital investment, both tangible and intangible, attributable to the establishment and integration of the present large-scale enterprises. Such costs were necessary to secure cheaper, more plentiful and more dependable service; the public continues to benefit from them and it is highly inequitable to assume the benefits and deny a return on the necessary capital costs.

In connection with the foregoing, it may be of interest to quote the following paragraph from an editorial which appeared in *The Economist* of London a year ago:

". . . The capital accounts of nationalized industries will—or at least should—consist of the compensation moneys paid to former owners. They will—or should—represent the capitalized value of net maintainable revenue; they will allow for unremunerative assets, and should also allow for highly productive and unfructified capital. The state should thus start with a clean capital account for every nationalized industry (if compensation is fair and not excessive), properly related to earning power. This gives it an immense advantage, and a great responsibility. The capital account of each national corporation must, in public honesty, be absolutely guaranteed against any form of arbitrary alteration or manipulation. It must not be pooled with the capital accounts of other corporations, or lost in the welter of the Consolidated Fund. It must at all times be possible to measure the productivity of capital in each nationalized industry; to calculate the adequacy of the sums which are ploughed back to replace the physical assets at the end of the working lives; and to estimate the need for extending the assets by the investment of new capital."

Fixed Capital Cost

It seems strange to find an editorial in a publication, which has consistently supported the contemporary adventure in State socialism in England, stressing the need for maintaining the entire fixed capital costs of the proposed government-owned enterprises, whereas certain commissions, particularly the Federal Power Commission, have done their utmost to destroy the identity of cost of fixed capital of the private-enterprise utilities in the United States and to prevent a reasonable return either on the prudent investment in the enterprise or on the fair value of the assets devoted to public service.

"Original Cost"

It is high time that the innovations in accounting and rate-making policies spear-headed by the Federal Power Commission should be stripped of their borrowed raiment. Original cost as practiced by that Commission is not based on a sound accounting concept, any more than a 5 per cent return on the "original cost — less straight-line depreciation" (typified in the recent Safe Harbor Decision), is based on a legitimate objective of rate-regulation. These developments are part of a cleverly coordinated scheme to make conditions so difficult that private capital will be forced to give up the utility field. Other directly related segments of the scheme are dealt with in the subsequent paragraphs relating to utility finance.

Trends in Utility Finance

The issue of transcendent significance in utility finance is whether the industry will remain under private-enterprise ownership and business management or whether it will be expropriated by various forms of governmental ownership. My comments will be restricted to this single issue, which is of grave importance not only to the utility industry, but to all industries and all citizens of our country.

In 1933 Congress passed laws authorizing the federal government to make loans and free grants to municipal and other government-owned electric plants, and also passed the TVA Act. From these auspicious starting points, the architects of collectivism have missed no opportunity to spread government ownership and cooperative developments in the utility field. With hundreds of millions of direct governmental appropriations and with additional hundreds of millions in tax subsidies, it is not surprising that their efforts have made serious inroads on private enterprise. During the past 15 years government ownership of electric utilities measured in generating capacity or in production has increased from approximately 6 per cent of the industry to approximately 20 per cent. In comparison with 1932 levels the generating capacity of government-owned utilities has increased over 400 per cent and production has increased over 800 per cent.

In the six war years, 1940 to 1945, inclusive, the total taxes paid by private enterprise electric companies aggregated more than three and one-half billions or 22.6 per cent of operating revenues; two billion, two hundred million of this total went to the Federal Government. During the same period it is estimated that taxes paid by government-owned utilities approximated 3 or 4 per cent of their revenues. It is unnecessary to discuss at this meeting the manifest unfairness of this situation or to point out that it is as unsound economically as it is inequitable.

The crucial feature of the tax discrimination is the exemption of government-owned utilities from all federal taxes. This is true because the avoidance of federal taxation by government-owned utilities shifts the burden to tax-payers all over the United States, whereas subsidies in the form of exemptions from local taxes must be provided generally by tax-payers in the same community. While the wartime excess profits taxes have now been eliminated the present corporate income tax rate of 38 per cent applied to private enterprise utilities, but not applied to government-owned or cooperative utilities, constitutes a special inducement to municipalities and other government agencies to take over utility systems. Since income is the primary basis of economic value it is quite clear that in purchasing income before federal taxes the municipality or other state agency can afford to pay more than the properties are worth to the present owner or to any other private enterprise which must necessarily base considerations of value on net income after all taxes. The margin is further widened by the tax-free status attaching to the securities of the government agencies.

Crisis in the Pacific Northwest

The resourcefulness and zeal of the adherents of collectivism are well illustrated by the current promotion of the Southwestern Power Administration and by the developments in the Pacific Northwest. A recent article in the *New York Times* stated that it appeared inevitable that Puget Sound Power and Light Company, the largest utility in the Pacific Northwest, would be forced to sell its properties to government-ownership groups. The following paragraphs

of the article quoting the words of Frank McLaughlin, president of the company, effectively tell the story:

" 'There is no such thing as fair Government competition. Because of public power's large subsidies and special privileges, which in the case of Puget would amount to about 30 cents per dollar of gross revenue, private and public power cannot competitively co-exist.

'It is unrealistic to talk about preserving private enterprise in a territory where a ceiling on earnings has been placed by Government-owned properties operating at cost, which cost has been artificially reduced by subsidies and where all sorts of special privileges and preferences are accorded public agencies.'

Public Power's Advantage

"Pointing to what he described as the 'unfairness of such competition,' he offered the following example of advantages which would accrue to public power upon acquisition of Puget Sound Power and Light:

'1. The public agency could finance itself 100 per cent with completely tax-exempt bonds. The annual capital cost under such condition would be at least $2,500,000 less than that of the company which can obtain only a portion of its capital through the sale of bonds not tax-exempt. The balance of its requirements must be obtained from the sale of preferred and common stocks. Further, he declared, because of the growing competition from public power, the company has to pay more for its money, thus adding still greater financial strains, than it did before competition existed.

'2. The company's Federal taxes in 1946 amounted to about $2,600,000. A public agency would escape paying such taxes and also would pay about $1,000,000 less taxes annually to the State and local governments than the company now is paying.

" 'There is no magic of management that will offset the tax and cheap money advantages of public power,' Mr. McLaughlin said, adding that he will recommend to members of the House and Senate the introduction of measures that will establish complete tax equality between public and private power."

The annual subsidies toward government-ownership in the case of Puget Sound Power and Light Company aggregate more than $6,000,000 representing approximately 6 per cent on the original cost of the properties, less depreciation. Thus the subsidies alone aggregate more than the total rate of return allowed by the Federal Power Commission in the recent Safe Harbor Decision.

The recommendations of Mr. McLaughlin should be supported not only by the utility industry but by all industries, the state regulatory commissions and all people who believe in private enterprise. If Congress does not remove the artificial and unsound financial encouragement being given both by direct appropriations and by indirect but equally effective tax subsidies, the utility industry will be expropriated from the field of private enterprise and business management. I hope that few are so gullible as to believe that the appetite of collectivism can be satisfied by the conquest of one industry or that personal liberty can exist where governments manage and dominate the production of materials and services. It is incompatible with common sense to fight the spread of totalitarianism abroad and at the same time to tolerate and even nourish the incubus of the same disease in our own country.

Indiana Electric Association Sponsors Young Men's Utility Conference

THE Seventh Annual Young Men's Utility Conference, sponsored by the Indiana Electric Association was held in Ipalco Hall, the employees recreation center of the Indianapolis Power & Light Company in Indianapolis on April 15 and 16, 1947. Approximately 225 young men, representing electric utility companies throughout Indiana, were in attendance.

H. T. Pritchard, President of the Indianapolis Power & Light Company welcomed the young men on behalf of the host company. He reviewed, briefly, events which led to the holding of the first Young Men's Utility Conference in 1938, stating "that was the first such Conference held in Indiana, and probably the first of its kind held anywhere. It attracted nationwide interest to our industry and stamped electric utility companies in Indiana as being progressive and co-operative and particularly interested in developing young men for positions of responsibility and leadership." He urged the young men in attendance to recommend the organization of young men in individual companies to carry on throughout the year such worthwhile activities as the Annual Conference.

D. C. Hess, Vice President of the Indianapolis Power and Light Company and President of the Indiana Electric Association in his opening remarks explained that the general purpose of the meeting was to provide an opportunity for the young men to obtain the latest information and knowledge regarding the various phases of the electric industry and to provide an opportunity for the young men from the various companies to become acquainted.

Other speakers at the Conference were D. O. Coe, President of the Indiana Junior Chamber of Commerce; A. B. Rodner, Jr., President of the Television Advertising Productions, Inc.; E. D. Raddatz; G. S. Dailey, Indianapolis Power & Light Company; and E. D. Anderson, Vice-President of the Northern Indiana Public Service Company. The following spoke before the second business session of the Conference: Von Livingston, General Counsel for the Indiana Service Corporation; E. G. Aabye, Public Service Company of Indiana, Inc.; R. M. Kopper, Indiana & Michigan Electric Company; A. W. Funkhouser, Indianapolis Power & Light Company; M. O. Ross, President of Butler University; J. P. Ditchman, General Electric Company; and Wayne Guthrie, City Editor of *The Indianapolis News*.

The business sessions and the group dinner were presided over by young men connected with member companies of the Indiana Electric Association. Paul Squire, Southern Indiana Gas & Electric Company, presided at the first business session, R. D. Saffen, Indiana Service Corporation, at the group dinner; L. F. Yuknis, Northern Indiana Public Service Company, at the second business session and R. E. Metzger, Indiana & Michigan Electric Company at the closing session.

Economic Guideposts for Business Planning

By Murray Shields

Vice-President, Bank of the Manhattan Company

An address before the Joint National Conference of Electric and Gas Utility Accountants, Buffalo, N. Y., April 7-9, 1947

THE ECONOMIC danger signals are coming up and they call for caution in financial and inventory policies. But we have the green light for the period after the readjustments in prices and production have been made, and this is no time to burn the blueprints for increasing efficiency and expanding capacity to supply the great and growing demands of our economy.

The years ahead are likely to present to the planning executives of business many difficult problems and challenging opportunities, for this is a time of recurring international crises, of difficult readjustment from the abnormal price and production situation of the war and early post-war periods and of perplexing problems in debt management, in monetary control and in labor-management relationships. And it is as true today as it has been in the past that the measure of success of an individual business will depend in large measure on the skill with which it adapts its operations to the economic environment in which it operates, the care with which it avoids the pitfalls of an uncertain future, and the aggressiveness with which it takes advantage of the opportunities of a dynamic period, the shape of which we can see only vaguely at this time. My assignment in this paper is to outline to you the results of some of the studies which we have made at the Bank of the Manhattan Company for the purpose of setting up economic guideposts for use in charting business policies and in designing production schedules, financial budgets and capital programs for the challenging situation we appear likely to face.

Second Postwar Phase

For the purpose of this analysis it is useful to divide the post-war period into three phases. First was the phase of physical reconversion, military demobilization and elimination of wartime controls. We have completed this process for American industry has achieved another miracle in reorganizing its facilities for peacetime production and the Government—somewhat reluctantly to be sure—has given up most of the wartime controls and put into reverse the greatest military machine ever built. Now, we seem about ready to move into a second phase of extensive and perhaps serious readjustment which is destined to be followed by a third phase of high and rising production. It is the readjustment and the post-readjustment phases to which this discussion is directed.

Economic Readjustments Ahead

The many economic distortions and tensions which we inherited from the war and reconversion years may make it necessary for American business to experience a period of extensive readjustment in the not too distant future The time required to restore better working relationships between prices and costs and to correct the many maladjustments which had their origin in the abnormal conditions of demand-supply during the past few years are likely to differ widely among various industries, commodities and areas of the country. The timing and order of developments in this phase do not lend themselves to precise prediction but there is basis for the warning that the necessary readjustments may not be effected without a moderate economic setback, although it seems likely that they will not require a depression as long, deep or serious as that of the early Thirties.

The belief that no severe or prolonged depression is called for at this time is based on the very substantial backlogs of deferred demand which have yet to be made up, clear evidence that the monetary and banking structures are virtually immune from violent deflation (without which we have rarely experienced an economic collapse, the fact that individual holdings of United States Bonds, currency and bank deposits are $100 billions higher and corporation net working capital $30 billions higher than in 1939 and, finally, because the many predictions of bad times ahead have caused numerous businesses wisely to put their financial houses in order.

Danger Signals

While the phase of readjustment does not seem likely to usher in a great depression, it is well to keep in mind that the *danger signals are up* and that the planning executives of American business have no alternative but to allow for the possibility that we may have some painful declines in prices if not in production.

Danger Signal 1. We have had a spectacular rise in commodity prices. Agricultural prices are on the average higher than they were just before the crisis in 1920. The cost of living is up 15 per cent in the past 8 months. Wholesale commodities are up 28 per cent in the same period and 16 basic commodities are up 60 per cent in a year. Price increases of this magnitude and rapidity represents a danger signal because our economic history teaches that what goes up rapidly comes down fast. Also we know that distant futures are generally below spot quotations for many commodities and that there were recent sharp declines in a few products, which previously had spectacular advances. These are warnings that there are numerous soft spots in the price structure and, in the event that basic commodities continue to rise as rapidly as has been the case since January of this year, and if that rise were communicated to other parts of the price structure we would face a really dangerous situation, for a drop in prices from much higher levels than now prevail might have close-to-disastrous effects.

Danger Signal 2. Business inventories have increased $7 billions or 25 per cent in 8 months—a rise too fast for comfort for it has generally been the case that a sharp expansion leaves inventories in poor balance and so high that a period of sales from inventory is necessary.

Danger Signal 3. The stock market, which is not always a good barometer of the economic weather but generally is a good thermometer to measure how investors feel about prospects, experienced a substantial decline last year and

has in the past few months been unable to make any substantial progress, despite the improvement which has occurred in the labor situation and the very substantial earnings reports for 1946. Investors, as a group, seem to be something less than enthusiastic about the economic prospect.

Danger Signal 4. After an old-fashioned boom in real estate prices and in travel and luxury expenditures, there are signs—faint as yet in some cases, obvious in others—that consumers have less to spend and are spending what they have more cautiously. The transition from the wild days when war contract profits, black market money and income tax evasion funds were causing booms in some of our markets are behind us.

Danger Signal 5. High taxes and a rising cost of living are taking a terrible toll on the purchasing ability of factory workers as well as recipients of fixed incomes. While hourly earnings are up sharply, the weekly income received by many millions of families will, after meeting necessary "cost of living" expenditures, provide a smaller margin for the purchase of consumers durable goods than was the case 2 years ago. It still is true, however, that the purchasing power of the weekly take-home is well above what it was in the prewar years.

The above list of danger signals is too formidable to be disregarded despite the fact that there are important elements of strength in the present situation and few indications of immediate difficulty. For, although it is not possible to be certain that a serious business setback is imminent, it would be a tragedy for an individual business if in failing to protect itself against the difficulties of the readjustment phase it so weakened its position as to make it impossible to take profitable advantage of the years of good business which are likely to follow. Thus it would seem to be prudent for business policy to make allowance for:

1. Reasonably conservative inventory policies. Price fluctuations in commodities are likely to be quite erratic and it will be far better for inventory policy to be closely geared to the conditions in individual commodities than to the assumption of general inflation after an already substantial rise in prices. The times suggest that it will be better to stay in the business of producing as efficiently and selling as aggressively as possible and to avoid inventory speculation which generally has proved to be costly, and
2. Cautious financial and credit policies. We are in a period where the sort of long range financial budgeting which many concerns have found indispensable is clearly called for. It is good advice all of the time, but particularly for the period ahead that capital needs be met from equity securities or long-term bonds.

The Prospect for Post-Readjustment Prosperity

Once we have successfully passed through the readjustment phase this nation should be ready for a period of productive activity far surpassing that of the Thirties. This view of the outlook is based on a number of factors.

The Technological Revolution

The rate of technological progress during the past few years gives promise that investment in new and improved productive capacity will again be a dynamic force making for economic expansion. The scientific research supported by American industry during the past quarter century should make it possible for this nation to telescope into the brief span of the next few years the technological improvements which in earlier days would have required generations. Our scientists may well have brought this nation to the edge of one of the most glorious periods of man's struggle to increase his economic well-being, for the technological revolution of the post-war decade may involve a greater change in our industrial and business environment than was brought by the industrial revolution which took place in the half century following 1775.

This is not the place for an extensive discussion of the scientific basis for our new technological revolution but a brief list of some of the "new words" in our industrial vocabulary will give a hint of the potentialities for expansion which lie ahead. Some of these "new words" are electronics, fluorescence, super-octane gasoline, the turbo-supercharger, the gas turbine, supersonic and jet planes, powder metallurgy, electronically controlled machines, centrifugal forging, synthetic materials of infinite variety, sulpha, penicillin, streptomycin, germicidal lamps, the electron microscope, prefabricated housing, packaged kitchens and bathrooms, frequency modulation, facsimile reproduction, television, quick freezing, the home freezer, air conditioning, the flame weeder, the cotton picker, precision planting, seed pelleting and a long list of others too numerous to mention. The important fact is that applied science is making available to American business a wealth of new industries, methods, machines and materials which are capable of expanding present industries by reducing cost to the consumer and of creating whole new industries which should keep our business operating at a high and rising level long after the temporary post-war backlogs have been forgotten.

We have in the revolution in industrial technology the ultimate answer to those who would sell this nation short, for the facts of technology make a shambles of the silly talk of economic maturity we heard not long ago. Our scientific frontier pales into relative insignificance the geographic frontier of the past, and instead of over-saving and under-investment—one of the economic bogies of the Thirties—we are, once the necessary readjustments in cost and price have been made, faced with a great upsurge in investment and with the threat of under-saving instead of over-saving.

Prospects For Expansion

The technological revolution should give us a basis for reinvigorating an economic machine which was stalled during the Thirties. It is not without significance that in the period 1936-38, when we had an average of almost 8 millions unemployed, the total of new securities and mortgage issues was only $1.3 billions per year. Contrast this with the late Twenties, when unemployment was not a problem and new private securities and mortgage issues averaged about $9 billions per annum. The new revolution in industrial technology should bring a far-reaching expansion in investment, since

—our railroads must spend several billion dollars in the next decade if they are to take advantage of the new light-weight streamlined passenger trains, the new motive power, the new light-weight freight cars with modern bearings and the new signal and radio communication systems which make it possible to reduce costs, increase speed and improve the safety of railroad transportation.

—frequency modulation radio can be made available to our people only by the expenditure of vast amounts for broadcasting and transmission

facilities for it has been estimated that we will need as many as 3,000 such broadcasting stations.

—before television can be made available to more than half of our population, vast expenditures will be required, with coaxial cables alone involving an investment of close to $1 billion.

—because a large proportion of the housing construction which now is planned will be on "raw," undeveloped property, an investment by municipalities of close to $1,000 per house will be necessary for roadways, school facilities and other community services, and with housing scheduled at about 1,000,000 units per year, once construction costs are readjusted downward, the required municipal investment is quite large.

—because industry needs vastly increased supplies of electric power if it is to make full use of the automatic machines which science has recently developed and because of increased use of power by the many electrical devices now regarded as standard equipment for the home, it has been estimated that it will be necessary in the next 5 years to expand central station capacity by one-third—which would exceed any 5-year increase on record.

—the cost of full mechanization of cotton farming is estimated at $50 per acre and since we have over 20 million acres of land devoted to cotton growing, it is obvious that a substantial investment will be involved.

—if we are to have full development of the airplane transport industry we shall need in addition to large expenditures for planes and ground servicing equipment, a substantial investment in airports.

—many large corporations have announced plans for colossal capital expenditures in the next few years. One expects to spend $2 billions in that period, another $600 millions, and a considerable number anticipate that their capital expenditures will be more than $100 millions each, and in numerous cases more than in any comparable period in their history.

Expenditures by industry to take advantage of the new technological developments, plus outlays to offset deferred obsolescence and maintenance during the war years, when added to expenditures by municipalities and by individuals for housing facilities, are capable of raising total investment expenditures to an average level several times what they were in the depressed Thirties and perhaps even as high as double what they were in the prosperous Twenties. Thus if business initiative is free to make full use of the new opportunities for expanding markets and lowering costs it seems likely that we will no longer have reason to fear that under-investment and over-savings will act as a powerful deflationary force in our economy.

Technological Cost Reductions

Technology is also capable of removing the threat that industry will have to price consumers' durable goods out of the mass markets. This is a risk of which businessmen are acutely aware, for they know from hard experience that it is the iron law of economics that people cannot consume what they do not produce no matter how large their incomes happen to be. But it is encouraging that through the cost reducing techniques which have recently come out of our industrial laboratories we should soon be able to price many more commodities into the mass market. The importance of this is clear, for the phenomenal growth of American industry and the accompanying improvement in our standard of living to a point where it is the envy of the whole world is the result of one of the most powerful chain reactions in economics, i.e., from technological improvement to lower costs—from lower costs to wider markets—from wider markets to mass production—from mass production to still lower costs and from lower costs to still wider markets. Our economic history is replete with examples of this process. American productive enterprise, using the methods of modern science to supply markets created by our merchandising genius:

—lowered the average price of automobiles from over $2,100 in 1907 to $565 for a much better, a much more luxurious and a much more efficient automobile in 1940, with the result that the number of cars in operation increased from 140,000 to 27,400,000.

—reduced the average retail price of household electric refrigerators from $350 in 1927 when 375,000 were sold, to $155 in 1941 with the number sold increasing to 3,500,000.

—reduced radio prices from an average of $127 per set in 1934 to $40 in 1941, while the number of sets sold increased from 1 million to over 13 millions.

—reduced the average unit price of household electric ironers from $150 in 1925 to about $50 in 1941 and increased the number sold by 6½ times.

—reduced the average unit price of electric washers by almost a half from 1922 to 1941 while the number sold was increased by almost 5 times.

—reduced the average retail price of incandescent lamps from 39¢ in 1921 to 17.6¢ in 1941 and increased the number sold approximately five-fold.

—reduced aluminum prices in the period 1930 to 1946 from 24¢ per pound to 15¢ per pound, in which period production was increased from 114,000 tons to more than 500,000 tons.

—reduced magnesium prices from 27¢ per pound to 20½¢ from 1930 to 1944, while consumption was increased by 7500 per cent.

—reduced prices of automobile tires and tubes by two-thirds in twenty years so that production could be twice as great. On a tire-mile basis, tires cost only about 8.5 per cent as much in 1939 as they did in 1921.

—reduced rayon yarn by about three-quarters in price, while production was increased eleven times.

The pattern of rising consumption with lower prices was an outstanding feature of our economy prior to the great depression, and the technological revolution in which we now find ourselves offers the promise that we are at the beginning of a new period, when American industry will bring larger and larger quantities of a wider and wider variety of goods and services within the reach of more and more of our people.

New Markets for American Industry

American business has several vast new markets to develop in the immediate future. These markets are the result chiefly of wartime developments—the deferred demands of consumers everywhere which accumulated during the war period; the accelerated rate of family formation which provides a solid and substantial market for housing and furnishings and community facilities; and the needs of great sections of the world not only for relief and rehabilitation

but, what is more important, to rebuild, to improve, to extend and to modernize their productive facilities.

Another circumstance of great significance to the markets of the future is the fact that millions of our people who were completely or partially unemployed during the depressed Thirties were raised abruptly to the middle income class during the war years. These people now have a considerable stake in cash, deposits and War Bonds, in addition to better prospects of employment than they had in any peacetime year since the early Thirties; hence they are in a position to transform their wants into effective demand in the markets of the country. Such demands are not likely to become effective until the cost-price readjustments referred to earlier have been completed, but they are large enough to justify an optimistic appraisal of the post-readjustment outlook.

It has been estimated that since 1940, our total population has increased 11 millions, the number of new families has expanded by over 4 millions, approximately 3.5 million families have migrated from one place to another, and 12 million more people are employed at an average increase in weekly earnings close to 70 per cent. The impact of these changes on family purchasing power is significant, and the number of families and single spending units with annual incomes over $2,000 has been raised from about 6¼ millions in 1935-36 to close to 25 millions today. These statistics give a rough indication of the vast markets for goods of all descriptions including housing, automobiles and community facilities which now await development.

A More Favorable Climate for Private Enterprise

It is one of the most important facts of our time that many of the barriers to business expansion, which kept American industry in the doldrums for over a decade, have recently been removed. The deflation, first in the volume of money, then in the rapidity of its turnover, which accompanied and followed the dreariest and most devastating depression this nation has ever experienced, is now behind us. A global war of defense against powerful enemies, which was a deflationary factor on investment even in the late Thirties when the clouds of conflict were forming, has been fought and won. The people have recently elected a new Congress under circumstances which leave no doubt of their determination to have done with the anti-business policies which for more than a decade stifled business initiative. And finally we seem clearly to have emerged from a period which was marked by progressively higher and steadily more burdensome taxation, and now face the prospect of successive and substantial tax reductions.

For these reasons it seems likely that the post-readjustment period will be marked by a high and rising level of production and another great upsurge in the American standard of living. This is not to say that the period will be an easy one for business for before long we shall have moved out of the condition of acute scarcity, and out of the period of reckless buying without regard to quality or price to a condition of relatively plentiful supply and a greater variety of choice among qualities and price of goods and services—in short, from a sellers' to a buyers' market.

Supplementing the normal tendencies toward intense competition will be the fact that new industries mean new competition for the consumers' dollar and new techniques, materials and methods mean new low costs for those who take advantage of them and new price competition for those who do not do so.

Presaging a period of sharp competition from still another direction is the tendency apparent in many instances for business concerns to widen their fields of endeavor by entering lines of production, merchandising, or service heretofore outside their spheres of activities, which means that they are, or will be, new competitors of the old-line companies. In some fields of industry, the war period brought an expansion of facilities to a point much beyond anticipated peacetime needs and doubtless present ambitions call for more expansion in some lines than later demands will actually support. Moreover, it has been fairly common experience of American business, even where excess capacity does not exist, to find that the break-even point has risen materially above what it was a few years ago. And finally, foreign competition can assuredly be expected to reassert itself in time.

On the whole, it appears that the post-readjustment period will be marked by rugged competition, relatively low profit margins and high rate of business mortality, in which event business risk may be a much more significant factor than it was during the period of easy wartime profits.

It is likely that while the post-readjustment period will bring high production it will be marked by economic instability to an important degree. Some of the markets to which reference has been made are more or less temporary. For example, the deferred consumption demands resulting from the war and the foreign relief and rehabilitation requirements will eventually decline in importance. For a while, business concerns will make heavy capital expenditures, as will individuals and state and local governments, but these expenditures are likely to vary considerably from year to year for such outlays are optional and can be deferred if costs seem too high and if confidence in the outlook wanes. Furthermore, the Government itself will probably add to the instability in our economy at times. Although its theoretical objective of "compensatory fiscal policies" is to offset fluctuations in private investment and business activity, in practice political expediency often transcends economic considerations as the determining influence in Government expenditures and tax policies. Government policy is likely to err first in one direction and then in the other, it is likely to be poorly timed, and it is thus more likely to be a factor making for instability. With the high level of Government expenditures which seems likely, fluctuations in receipts and expenditures will tend to have a magnified effect on the economy as a whole.

While the post-readjustment period seems likely to be marked by a high degree of instability and by intense competition, the prospect for high and rising demand for the products of American industry is such as to suggest that even if the interval of readjustment brings a severe decline in prices and production, it will be no time to abandon plans for expansion. It will, on the other hand, represent an opportunity to regear production schedules through careful, thorough and skeptical analyses of post-war markets, to prepare for competition, to redouble efforts to increase efficiency and cut costs and to adopt aggressive and realistic sales and advertising programs.

As has been the case from the earliest days of American history, the juiciest plums are going to those concerns which manage their financial and inventory policies so conservatively that they avoid the pitfalls of any period of business recession which comes and, meanwhile, build their organizations for aggressive and efficient expansion in the periods of good business.

Employee Relations for Office Workers

By Merle Hale

Director, Salaried Personnel Activity, General Motors Corp.

An address presented at the Joint National Conference of Electric and Gas Utility Accountants, Buffalo, N. Y., April 7-9, 1947

BY way of defining the area of consideration, I am basing my comments on the experience gained in dealing with the problem of employee relations as it applies to salaried employees and particularly to the employee in this office. While many of these comments apply equally well to the hourly-rated employee in the factory, it is the relationship between the office worker and management that I am discussing particularly.

My approach is based on the conviction that building and maintaining good employee relations is just plain sound business. Obsolete or poorly maintained employee relations may have a more serious effect on the profit and loss statement than an obsolete or poorly maintained plant. Your various companies certainly give the necessary attention to their heavy investment in plant facilities. The same sound business reasons call for giving proper attention to the even greater investment which you have in your employees—your human assets.

The Difference Is The People

In this connection, I should like to quote one paragraph from a special introductory section of the General Motors 1946 Annual Report which will be distributed in the near future.

> "It may properly be said that in our existing industrial economy the only difference of a fundamental nature between one business and another operating in the same field is the people. The same sources of raw materials are available to all. The same equipment will be furnished to anyone who may buy. The existing standards of technology are largely a matter of common knowledge. The same markets are available with the same instrumentalities to capitalize them. The same reservoirs of capital are available to those who can qualify. All these means are open to everyone and, generally speaking, on equal terms. The one major difference is the people."

Now, there is nothing new in that thought. Granting that that point of view is generally accepted, and I believe it is, why have we not made the same progress in dealing with our human assets that we have made in dealing with our physical assets?

There are many reasons. The primary one, of course, is that poles, gas mains, switchboards and turbo-generators are relatively simple, stable items as compared to clerks, linemen, power house attendants or even general managers. The characteristics and performance of a physical asset are highly predictable. There is no factor of emotion or attitude to contend with. Unlike pieces of equipment, individuals are constantly changing in abilities, attitudes and interests. They are subject to all kinds of inside and outside influences. As a result, employees may not react the same a year from now as they do today.

The Three Pillars

We all know that, because of this human element, it isn't possible to develop a scientific formula that can be applied to produce good employee relations. But experience has convinced me that the following three principles are fundamental prerequisites.

1. Treat employees fairly.
2. Pay employees fairly.
3. Fill each position with an employee who is qualified physically, mentally and temperamentally for the job.

These are the three pillars that support the structure of good employee relations. The stability and solidarity of your employee relations are dependent upon the soundness of each of the three supporting pillars.

I am not prepared to spell out and defend a code of fair treatment. Nor can I give you a formula for determining salaries. Fairness is not some academic concept. Neither is it static. One good criterion of what is fair is the general practice of sound and progressive companies.

I am going to discuss some of the mechanics involved in putting into effect the three principles of fair treatment, fair pay and the right man in the right job. But, before doing so, I want to digress long enough to make two general observations. My purpose is to emphasize two basic facts which importantly affect the manner in which we deal with these three pillars of employee relations.

Responsibility Rests With Management

First, I would like to emphasize this obvious point: The responsibility for good employee relations rests with management. More specifically, the responsibility begins with the president or general manager and must be assumed and shared by every employee in a management or supervisory position. Unless the top executives of the company believe wholeheartedly in the importance of this phase of the business, and are actively interested in building good employee relations, the organization below them will find it difficult to make real and lasting progress in this direction.

The quality and effectiveness of the employee relations job depends directly upon, first, the attitude of top management and, second, the degree to which supervisory employees assume and properly discharge this phase of their responsibility. I believe this point is generally accepted. However, if any of you are interested in proof, on the basis of scientific investigations, such proof is to be found in studies such as those reported in Dr. Mayo's recent book, "The Social Problems of an Industrial Civilization."

We Must Understand The Employee

My second general observation is this: Before we can effectively deal with employee relations we must understand the employee. We must appreciate his viewpoint, his desires and ambitions and try to understand the forces that motivate him.

I am keenly aware of the fact that attitudes and reactions and the forces that motivate individuals reflect the political, economic, and social trends of the times in which they are living. I

further appreciate that the world is apparently trending toward regimentation and away from individualism.

As a member of one of the largest companies in one of the greatest mass production industries I appreciate that we sometimes find it necessary to treat employees on a group basis. Finally, we cannot escape the fact that outside employee organizations derive their strength and power through regimentation and mass action.

In a large sense, this very factor differentiates the two conflicting ideologies in the world today. A contrast of these two ideologies may be of interest at this point. One believes in conscription of labor and capital; the other believes in voluntary cooperation. One believes in public ownership, the other in private ownership. One advocates state control of employment, the other freedom of opportunity. One finds censorship necessary; the other advocates freedom of speech and press.

Now, what has this to do with employee relations, and what has this to do with knowing employees? In my opinion, it has a great deal to do with both. Let me try to explain.

Today, many subversive elements are at work trying to undermine our system of free enterprise. But, your companies and others representative of American business furnish concrete evidence that the pursuit of a profit is the best means yet found to motivate an economy of abundance. Inherent in this free enterprise system is the concept of freedom of opportunity: Each individual's initiative and capacities are recognized and rewarded.

Salaried Employee Primarily An Individual

The usual salaried office employee is in day to day contact with management and frequently his work involves management problems. Further, in most cases, the office employee assumes a certain individual initiative in connection with his work. Thus, it is natural to expect him to be primarily individualistic in his characteristics. He wants to be treated as an individual rather than have his treatment determined on a group basis. He wants to stand on his own feet and go forward by developing and expanding his abilities. In general, he is motivated by the thought, "I'll be boss some day." Further, because of this point of view, I believe that he intuitively understands that opportunity to compete freely and fairly, to get ahead in the world through the use of his own initiative, is the fuel that keeps American industry moving forward. He expects initiative to be rewarded and does not resent having laziness penalized.

If we agree that this is the viewpoint of most salaried office employees, or even a substantial proportion of them, then we must recognize and implement this point of view in our employee relations programs. Insofar as possible, treat these employees as individuals and give consideration to their desire for an individual rather than a group status.

I could make a third observation or comment with respect to training or education. However, as I have had the privilege of reviewing your committee's report—"Supervisory Training, the Keystone of Good Employee Relations," I am sure that this subject has been well and carefully dealt with.

Mechanics of Building Good Employee Relations

Now as to a few of the mechanics which can be used in building good employee relations. In discussing this phase, I am going back to the three pillars which support good employee relations.

Need For Personnel Procedures—First, let us consider the item of treating employees fairly. In duscussing this question it can be assumed that it is the intent of all managements to treat employees fairly. But this intent is not enough. It is not sufficient for management to simply want to conduct its financial business on fair and honest terms. On the financial side it is necessary to reduce these matters to writing. I imagine the companies represented here all have something equivalent to a financial procedure. In a broad sense there is the same need in a large business for personnel procedures as there is for financial procedure. In both cases, of course, they require periodic revision to keep pace with changing conditions.

Outside organizations, in their organizing campaigns, usually make the claim that the employee has no protection against the personal whims of his supervisor, favoritism, discrimination, etc. When employees are organized they attempt, through collective bargaining, to arrive at a contract that will spell out how the employee is to be treated under various conditions.

One of the disadvantages of such a contract, of course, is that it necessitates the treatment of all employees on a regimented or mass basis. However, the fact that the outside organization demands such a contract indicates the need for the establishment of suitable personnel policies and procedures which will, on the one hand, protect the employee from favoritism and discrimination, and, on the other hand, permit maximum consideration of the individual.

General Motors for several years has had a personnel procedure for salaried employees. This covers such items as the status of new employees, definitions of length of service, conditions under which leaves of absence will be granted, basis of absent time and vacation pay, the separation allowance plan, the general rules governing the basis upon which the employee's pay is to be calculated, etc. In writing this procedure the objective has always been to make it permissive rather than restrictive from management's standpoint. It must, of course, protect the rights and privileges of the employees. A handbook for salaried employees known as "Working With General Motors" outlines the elements in the procedure which directly affect the employees. Every salaried employee receives a copy of this handbook.

For the purpose of confirming the above point of view I am quoting a news article that appeared in the March 31, 1947, issue of *The Detroit News*. Recently the Ford Motor Company made a survey of employee opinion by sending questionnaires to all employees. The following is a quotation from the above article:

> "Question Number 1 asked the Ford workers whether they felt they were informed about the company's personnel policies—what the company expects of you and what it is trying to do for you?
>
> "Ford said only about one-quarter of the workers reported they were really well informed about the personnel policies. He wrote 'it is certainly important that all of us understand as fully as possible all the things that affect us.'"

Employees Must Appreciate That They Are Being Treated Fairly—Beyond having a procedure the employees must appreciate that they are being treated fairly. Giving all employees printed information about policies which govern their treatment helps them to realize that the company intends to treat them fairly and has set up definite machinery for carrying out that intention. Making this information public has an important

corollary advantage: It stimulates supervisory employees to be familiar with the company's personnel policies and to handle their employees in accordance with the published information.

One more point in this connection. It is important that the proper educational job be done with supervision in order that they know and understand the reasons back of certain policies rather than simply to be familiar with the policies themselves.

The Need For Gathering And Analyzing Facts

Going on with our discussion of the mechanics of building the three supports to a sound employee relations practice, the next item has to do with paying employees fairly. The third, as you will remember, has to do with getting the right man on the right job. In developing these two points I will try to clarify the explanation by using some analogies.

Now as a part of your job, you have the responsibility to your managements of keeping track of the physical assets. You can present facts as to the efficiency and productivity of these assets, their obsolescence, the rates of depreciation, their suitability and adequacy, etc. But now let me ask, what kind of a picture do you present to management with respect to the human assets of your various companies?

I am not predicting that we shall ever treat the personnel assets on the same factual basis as we do our physical assets. However, there is an opportunity for applying in the personnel field some of the techniques and approaches so familiar to all of you. There is need on the personnel side for more factual analyses, more study of trends, more comparative data. I am hopeful that you will be challenged by this thought.

The successful personnel man does not necessarily have to be a keen analyst or a finished statistician. On the other hand, he must understand people and the problems of people. Perhaps he should be more of an analyst and perhaps you men on the financial side should be more sensitive to human relations. But, to the extent that these qualities are lacking in either group, I feel that the one group can help and supplement the other.

Some Mechanics Of Fair Salary Administration

Before discussing some of the mechanics of fair pay I'm going to make this observation: Salaries must be maintained at a competitive level. As a starting point for the discussion, I am assuming that this is the viewpoint of the companies represented. On this basis, then, the pay problem gets down to the equitable salary treatment of individual employees and the mechanics of accomplishing this.

When we are dealing with salaried employees the determination of what represents fair pay to the individual usually involves the consideration of certain factors not generally present in dealing with the pay for production workers. In the usual production job, both the quality and quantity of the output of the worker can be checked and measured. Most office jobs, however, do not lend themselves to the same definiteness of standards. In most cases the value of the individual employee's output reflects his initiative, experience, judgment, and mental alertness. This fact is generally recognized in that salary ranges provide a much wider merit spread than that provided in the wage range for production workers.

In spite of the obvious logic of this, efforts are being made through collective bargaining in many companies to substitute, for merit increases, automatic increases based upon length of service. This, of course, is consistent with the overall psychology of mass treatment and regimentation. It does, however, raise a question as to the type of salary administration that prompts employees to forego individual consideration and accept salary regimentation.

If salary ranges provide merit rate spreads for various job classifications, management must assume the responsibility for the proper salary of the individuals who are covered by such a plan. It is not enough to simply set up salary ranges and leave the determination of indivdual salaries entirely to first-line supervision. Controls or audits are essential.

The Balance Sheet

First, we need periodic salary surveys of all employees who can be classified by type of job or responsibility level. From such a survey there can be prepared a balance sheet type of report—a report on the static condition of salaries. Management needs such information in order to answer the following:

1. How do salary levels for various job classifications compare with wage levels? How do such salary levels compare with the salary levels of competitive or comparable companies?
2. What is the chronological trend in salary levels and how does this trend compare with the chronological trend in wage levels or the trend in salary levels of other comparable companies?

In addition, such information summarized on the basis of job classifications or responsibility levels and broken down by departments, operations or plants provides one of the essential bases for sound salary administration. Further, this balance sheet type of salary report permits of dealing with individual or group situations on the basis of factual comparisons.

The Operating Statement

However, in operating a business we do not depend entirely on the balance sheet type of analysis. So in salary administration we should not depend entirely on static salary comparisons. On the business side the companion control is the operating statement. So, in the administration of salaries we need a companion control which reflects individual and group salary progress.

To my knowledge, less progress has been made in developing the operating statement approach to salary administration. I think there is a splendid opportunity for some research work in this field. Would it not be helpful to know the relative salary progress of one group as compared to another? Could you not deal with an individual salary situation more satisfactorily if you knew the individual's salary progress in relation to some par? We are doing some interesting research work in this area and, while we still haven't a completely satisfactory answer, I am very hopeful as to the ultimate results.

As an interim approach, a periodic analysis can be made of salary adjustments, classifying these as between merit, promotional and automatic increases. This analysis should show both the per cent of people receiving increases during a given period and the amount of each type of increase related to pay roll. The data can be broken down by job classifications or responsibility levels and comparisons can be made as between departments or operating units of the company.

On the basis of such information, management can initiate corrective action where necessary, by stepping up or reducing the frequency or amount of salary increases. Beyond this, of course, is the necessity for examining individual situations and making adjustments where and when these are indicated.

A report analyzing salary adjustments as outlined above and comparing the performance of each division with the total corporation is distributed periodically to the general managers of each division of General Motors. This report also furnishes them with comparative statistics as to average salaries by responsibility level.

Some Mechanics Of Getting The Right Man In The Right Job

Now let us examine the problem of getting the right man in the right job. At least in some respects there is a similarity between the problem of planning and effecting plant re-arrangements and improvements and that of planning and effecting personnel re-arrangements and improvements. In the case of plants and facilities, management has available for study and consideration such items as the following:

1. A forecast of requirements.
2. An inventory of present facilities. This probably includes information on the depreciation or obsolescence of the present plant.
3. Detailed specifications as to the type of equipment that is required and is available.

In personnel planning we need something comparable to a forecast of plant requirements. I know that some companies are pioneering in this field. They are trying to forecast organization needs by giving consideration to declining efficiency of individuals, probable retirements and, of course, normal turnover. Probably none are completely satisfied with the results and it occurs to me that you men with an analytical and technical background could be most helpful in this area.

Problems Of Personnel Inventories

The problem of taking an inventory of personnel is certainly fraught with untold difficulties not found in the problem of taking an inventory of plant facilities. Again, progress is being made under various headings. Some call it a system of employee appraisal; others speak of it as merit rating; others describe it as an analysis of potentials, etc. The term inventory appeals to me as being the most significant. Again I suggest that you men because of your background and training can make a contribution in this field by working with the personnel people in the development of a sound approach. By a sound approach I mean one that is factual, systematic, and dependable on the one hand, but on the other, takes into consideration the fact that this is an inventory of changeable, variable individuals, not poles, gas lines, or power equipment.

Developing Detailed Specifications

The third point is that of developing detailed specifications. Again, some very creditable work is being done in the field of job analysis. Too frequently, however, we judge the requirements of the job on the basis of either the job title or the characteristics of the man who has been holding the job. Neither may be suitable criteria for picking a replacement.

Perhaps I can illustrate the point I am trying to make this way. If a d-c generator is hooked up to an a-c system, the results are immediately apparent and disastrous. We know that it won't work and so we don't try to do it. But when we put a d-c type of individual into an a-c atmosphere, the results may not be immediately apparent nor may they appear to be disastrous. So, I am afraid that too many times we go on trying to put d-c individuals into a-c jobs.

Summary

Now let me summarize what I feel to be the high spots.

Active support of management needed. Development of good employee relations requires the active support of management and the active day-to-day, sincere, participation of all management and supervisory employees.

Treat the employee as an individual. I believe that the usual salaried office employee wants to be treated as an individual and that, because of this, good employee relations with this group can best be achieved by emphasizing individual consideration. Resort to group treatment only where the nature of the policy or practice requires. However, equitable treatment as between individuals must be insured.

Employees must be informed. It is not enough for management to agree that they are going to treat their employees fairly. Beyond this, the employees must be informed as to the ground rules and supervision must be required to operate within these ground rules. The end result is to have the employees feel that they are being treated fairly.

Need for overall controls and audits. The usual salaried employee consciously or sub-consciously judges his salary on the basis of his relative salary level and the relative salary progress that he has made. Both factors must be considered. Suitable controls and audits dealing with both factors are important elements in good salary administration.

Place the right man on the right job. The principal difference between companies today is the people. So, the company that can come closer to getting the right man in the right job is going to be the more successful. While we cannot parallel the practice followed in dealing with physical assets, we can gain from this practice some methods, techniques and approaches that will be helpful in dealing with personnel assets.

In conclusion, I want to make one more point which I believe is especially important at the present time. There has been a definite tendency in recent years, on the part of both employees and employers, to expect the employer to do more and more things for the employees. The spotlight has been on the employee's rights and benefits rather than on his responsibilities and opportunities. He has been conditioned to consider only what he could get rather than what he could contribute.

We have talked a great deal about the concept that employees are the greatest asset of any company, but we seem to have forgotten that this works both ways. It is equally true that the greatest economic asset the employee has is a job in a strong and successful company. I believe management can find ways of bringing home to its employees a better understanding of the important fact that employee relationships are a two-way street. Employee relations programs should devote an appropriate amount of time and effort to developing on the part of the employees a better understanding of how they, personally, have benefitted and can continue to benefit by being a part of and playing their part in the American free enterprise system.

Write as You Talk—Customers Like It

By C. L. Sullivan

The Peoples Gas Light and Coke Co., Chicago, Ill.

A talk presented before the Joint National Conference of Electric and Gas Utility Accountants, Buffalo, N. Y., April 7-9, 1947

THE development of modern business as we know it in the United States has now exceeded the wildest flight of imagination of its founders. Everywhere we can see evidence of efficiency never thought possible. But one of the amazing things still encountered in many businesses is the senility of their letter writing program.

Certainly no one would think of buying a modern automobile with an engine of 1920 vintage. However, some companies which are extremely modern in every other respect, would be fortunate if their letters to customers were even as modern as 1920. As a matter of fact, not infrequently do we encounter correspondence that smacks of the 18th century.

All of us have met people in business who were extremely pleasant to converse with and very helpful in clearing up some misunderstanding we may have had with their company. The personal contact was so agreeable that we looked forward to meeting the person again. But, all of this was quickly changed when we received a letter from the same person who had been so very cordial to us when we called at their office. Why, we just couldn't believe that the writer was the same person with whom we had talked.

Jekyll and Hyde Complex

In the office he was perfectly natural and friendly and here comes his letter with stilted language, a lot of meaningless "dribble," and in fact it was even difficult to know just what he was trying to tell us. What brings on this Dr. Jekyll and Mr. Hyde complex in people? If a person can talk pleasantly and clearly, why can't he write the same way? The answer is very simple—he just isn't himself when he writes letters. Bound down by traditions that go back for years and years, our very sociable friend believes that you must talk one way but write another.

Shortly after I became associated with the customers department I happened to be at our main office in the public contact section when a dear little old lady came in with a letter that she had received from our company. She requested one of our interviewers to explain to her what the letter was all about. It was true the lady was beyond the "life begins at forty" stage but she was unusually alert and sharp for a person of her age. In less than five minutes the whole situation was cleared up for her and smilingly she said goodbye and was on her way. Fortunately the interviewer kept the letter that had puzzled the lady and I immediately inquired to see just what made it necessary for a customer to come to our office to have a letter from us explained.

Get Rid of "Shop Talk"

Frankly, it was strictly a case of being "so close to the forest that we couldn't see the trees." The letter had a substantial portion of "shop talk," entirely meaningless to the customer. Little wonder she didn't know what we were writing about and the thought struck me *"if you can talk it, you can write it."*

The thing that kept haunting me in connection with this case was that the interviewer had absolutely no difficulty in getting the customer to accept his explanation of her problem; yet when we wrote the same facts the interviewer had related, they were so distorted and jumbled that the customer couldn't understand what we were trying to say.

In the personal interview the customer has an opportunity to raise any points that are not quite clear in his mind but this, of course, only adds a further responsibility to the letter writer to write clearly and completely.

About this same time I came across an article in *Printers Ink* which had to do with letter writing—both good and bad. The article went on to emphasize that, somehow or other, unnecessary and almost meaningless phrases find their way into many business letters. My witnessing the puzzled customer who had received a letter from us and the article in *Printers Ink* was all I needed to know that our correspondence should be improved.

The next move to bring our letter writing up to date appeared to be instruction by someone who knew what we needed, and how we could get it. We were extremely fortunate in obtaining the services of an outstanding national authority on business letters who had been a manufacturer's agent, salesman, advertising manager, personnel director, and a teacher.

One of the first things our consultant did was to start a campaign of "off with the artificial and on with the natural." He illustrated this point by explaining that any business man who is going to be late getting home to dinner would not think of telephoning his wife and saying "I sincerely regret to inform you that I shall be late for dinner as of even date but with respect to same will arrive in due course." To be sure, if any wife received such a message from her husband by telephone it would mean one of two things—he had taken on a few too many in some cocktail lounge, or he had slipped off the beam mentally. What he was trying to hammer home with this and other illustrations, was that most of us are quite natural in our conversation but when we write a letter we put in the artificial scenery and for what, just no one seems to know.

Conversational Approach

The next step was for all of us to meet an imaginary customer who has become affectionately known as "Sophie Glutz." Poor Sophie didn't get far beyond the eighth grade in school and if we write so Sophie can understand us, the college graduate will also.

During the first week of our program to modernize our letters, we started omitting the formal opening and closing. Why should we cling to these old customs in letters? Certainly no one would think of starting a conversation with a customer as "Dear Sir" or "Dear Mr. Smith" nor closing it with "Yours very truly" or even "Sincerely yours."

The question may arise in your mind just how we got into the letter itself. We accomplished this by inserting the customer's name, if possible, in the first

sentence. For example, after showing the customer's name and address we start right out by saying "Thank you, Mr. Jones, for calling at our main office." Believe it or not, at the end of the first week of this human approach we were receiving replies from customers addressing us as "Dear Friends."

One of the first experiences we had that proved we were definitely on the right track in our efforts to "write as you talk," involved a letter we received from a customer who requested an adjustment for $7.50 on his account. The writer was an elderly gentleman who had been a customer of ours for several decades and he reminded us of this in his letter along with the fact that life had been rather unkind to him and on several occasions he had been "pushed around" by big business. He gave us a little fatherly advice that we had better not try the same tactics.

Here was the challenge for the new approach in letter writing and the question was, could it make good? In answering, we thanked the gentleman for his inquiry, complimented him upon his long life and also expressed appreciation for the many years it had been our privilege to serve him. We readily agreed that a loss of gas had occurred at the outlet of the meter and that we were glad to make an adjustment of $1.25 on his account, the amount of the actual loss.

In closing the letter, it was suggested that the customer might yet find happiness in a life that had been pretty well cluttered up with dark clouds, disappointment, and frustration. By return mail came a money order which paid his account in full, and accompanying it was a letter of thanks not only for answering the inquiry but for the fair and equitable adjustment. The customer also pointed out that in his half century of business dealings no one had ever written him a letter as nice as ours, a splendid compliment for us but a rather serious charge against business in general. This experience was all we needed to know that "write as you talk—customers like it" was not a theory but a reality.

The Human Touch

One of the points in good letter writing that we learned was the need for the human touch. No matter how well worded a letter is, if it lacks "H.T." it simply will not click. By human touch is meant that the warmth and naturalness of the letter writer's personality should find its way into the letter. Closely allied to this factor is the friendliness that should run all the way through the letter.

It may be easy enough to get a favorable acceptance from a customer when the answer is "yes," but the true test of a successful letter writer is his ability to say "no" when necessary in such a friendly and human way that the customer will graciously accept the negative answer. In the final analysis, the minute the customer opens the envelope, the writer steps out and starts talking. Just as in the face to face contact, the problem is to "warm up" the customer in the very first paragraph.

In developing the human touch in letters, an important thing to remember is not to get gushy, because the person receiving the letter will immediately detect insincerity. When a customer writes about sickness, death, births, success, or moving to a new home, these are good "hooks" upon which the letter writer should hang his hat as he calls, by means of a letter, to talk with the customer. Our writers are always conscious of the fact that the little personal things mentioned in a customer's letter to us are important to *him*—so we take time to talk about them in our reply.

Use Customer's Name

The use of the customer's name in the letter is helpful in creating a spirit of friendliness, but even this should not be overdone, or it again rings of insincerity. In a letter of two or three short paragraphs the use of the customer's name once is enough. In letters one page long, single spaced, the use of the name two or three times is sufficient to supply the personal, human touch.

When a customer tells us that the service was not discontinued on the date he requested, and he does not think he should be charged for the final bill our letter might go something like this:

"Thank you, Mr. Doe, for writing about the final bill for service at your former home, 123 South Main Street.

"We are sorry the service was not discontinued on September 30th as you requested. However, to make things right, the $1.70 bill has been canceled. You owe us nothing.

"We wish you health and happiness in your new home in Peoria. Should you return to Chicago and have occasion to use gas again, you will find us here waiting to serve you."

One of the best devices for getting the customer's attention is to find something in his letter with which you can agree. It might even be that there was an increase in the amount of the bill, but you need have no hesitancy whatever in going along with the customer's observation and first agreeing with him and then explaining *why*. Here is an example:

"Thank you, Mr. Blank, for writing about your November bill.

"Yes, you are right, it is more than the previous ones. However, did you notice that the August, September, and October bills were averaged? An averaged bill is issued when no meter reading is obtained. It may be for either more or less gas than was used but may be accepted because the next reading will adjust the account."

"Had you not received the averaged bills, you would have received one bill for service from August 15th to November 15th for $12.16. This is an average monthly cost of $3.04 and compares favorably with your July bill for $3.12 and the August one for $3.16. Thus, you see in spite of the November bill, your cost for gas is running about the same month by month.

"This little booklet we are sending along tells all about the gas meter. It will only take you a few minutes to read it through and you will find it full of interesting facts. Notice particularly on the last page an explanation of how to read the meter. This information will be helpful to you any time you wish to read the meter and check your own use of gas.

"It has been a real privilege, Mr. Blank, to discuss your account with you and you may be sure that you have been charged only for gas actually consumed."

You will recall it was suggested earlier that a spirit of friendliness run through every letter. The attainment of this goal is not always as easy as it may appear. The general tone of a letter can be quite friendly but suddenly a word or phrase creeps in that may make the customer actually boil. For the sake of tagging these trouble-makers so they are easily recognized, we have come to call them "red flag" words and phrases. A fairly common one is the expression "You *failed*." No normal person likes to be told he failed, nor does it build confidence for a large company to admit they *"failed"* to do this or that.

What Not to Say

Occasionally we receive letters from customers temporarily out of the city making inquiry about their accounts, and they merely sign the letter without giving us the address where the service is used. Our accounts are kept in street address order, rather than by customer's name, but few of our customers know this. It would be discourteous, to say the least, to write a customer: "You *failed* to tell us at what address you are using gas." How much more human and polite to say: "Before we can check your account, Mrs. Doe, it will be necessary for us to know the address at which the service was used. You see our customer

records (nearly a million of them) are kept in street name and number order. Just as soon as we hear from you, we shall be glad to give you the information you requested."

Another equally dangerous approach to a customer is to write that he *"must"* do this or that. Let's suppose a customer's service has been discontinued for non-payment of bills and he writes to know how much is to be paid before the service can be restored. You could write a letter and include a sentence something like this: "You *must* pay the outstanding bills which amount to $14.65 before the service will be turned on for you." How much nicer and more human-like to write: "Just as soon as we receive your payment for $14.65, we shall be glad to restore the service."

Another red-flag expression tells the customer what he *"ought"* to do or know. Take the case of a customer who writes that he is surprised the gas service was discontinued, especially because the amount involved seems insignificant to him. Why he would fairly bristle if you wrote him: "You *ought to know* from the notices you have received from us, that we intended to discontinue your service if the bills were not paid." To be sure he *"ought"* to have known, but let's not pour salt in open wounds. Don't you believe we would be more apt to regain such a customer's good-will by writing: "We are sorry your service was discontinued, Mr. Doe. We mailed you a notice explaining that if your payment was not received, it would be necessary to turn off the gas. It is unfortunate that our representative did not see you when he called at your home to accept your payment of the bills and in keeping with the terms of our notice, discontinue the service."

Coordinate Business Replies

Occasionally, we encounter companies, not only in the utility field but in other lines of business, where each department operates as though it were a separate company. This, of course, is quite puzzling to the customers. Suppose that the department receiving customers' correspondence gets a letter in which the customer requests an extension of time in which to pay a delinquent bill. Here is a marvelous opportunity for the building of good-will but frequently we see the opportunity muffed completely, or in the letter weakened, by including a sentence like this: "Arrangements have been made with our collection department to defer action on your account until December 10th, as you requested." That makes it sound as if the collection department and the customer's department operate as separate companies. How much more friendly and human it is to say: "As you requested, an extension has been placed on your account until December 10th."

As far as practicable, it is perfectly all right to cooperate with the collection department in tactfully reminding the customer of a delinquency, if such be the case. Also, it is the duty of the letter writer to encourage payment of outstanding bills, even though the primary purposes of the letter may not be collection activity.

Compliments to the Customer

Recently one of our customers wrote us as follows:

"I have lost an made a mastake in my gass bill. Id this the last gass bill or not and what do I ow u for gass. Please rite me and send me bill so I can pay it up."

This letter was not signed "Sophie Glutz" but well it might have been. Regardless of the misspelling, here was a direct and understandable letter from a customer who realized that she owed us money and wanted a bill so she could pay it. The following is the reply, and notice how the writer was complimentary to the customer in the closing paragraph:

"Thank you, Mrs. Doe, for writing about your gas account.

"The September bill, $2.66, and the October bill, $3.10, a total of $5.76, are unpaid.

"As you requested, we are enclosing a bill for these items. The net payment period has been extended so that you will have the usual time in which to take advantage of the net amount.

"We appreciate your desire to pay this bill promptly, and thank you for this evidence of your good-will."

Someone has written, "The sweetest sound in anyone's ear is the sound of his own name." All of us who are in public contact work know of the advantage of addressing a customer by his name, just as soon as it is known. It is only reasonable, therefore, that if a customer's name is misspelled on his bill or on letters to him, it is annoying. A situation of this kind requires a straight-shooting apology and assurance that there will be no further mistakes in the spelling. For example:

"Thank you, Mr. Doeblank, for writing and for sending in receipts dated September 18th and October 1st, which are enclosed. Your cooperation has been very helpful.

"Yes, you are right, the August bill of $4.47 was paid twice. As a result there is a credit of $4.47 on your account which will be shown on your next bill.

"It seems we have been misspelling your name, Mr. Doeblank. We are sorry. From now on we'll do it right."

Experience in some large utility companies has proved that enclosing return envelopes for the customer's payment is not practical because few of them are used. If your company does not supply envelopes, and a customer requests them, it is a real challenge to your letter writer to say "no" and to get the customer to graciously accept the negative answer. However, if you can give a little background of the reasoning for the negative answer, it helps the customer to see your viewpoint. In the case we have been talking about, the following letter might do the job:

"Thank you, Mr. Doe, for suggesting that we enclose return business reply envelopes with our gas bills. Thanks also for your payment of $1.97.

"We strive to give our customers efficient service and we have given a great deal of study to the suggestion you have in mind. However, the obstacle is that only 16 per cent of our customers pay their gas bills by mail. With nearly 900,000 gas users in our city, this would mean that approximately 756,000 of these envelopes would not be used each month—and that would be a serious waste.

"Also, the separation of bills for customers who usually make payments by mail is prevented by the even greater cost of removing these bills during the billing operation, making the additional enclosure, and then resorting them for delivery purposes.

"The company does have, for the convenience of its customers a number of authorized agents throughout the city. The Blank Company at 1022 Main street, is our nearest authorized agent to your home. Also, the addresses of our Branch Offices are listed on the gas bill.

"We sincerely appreciate your interest in making this suggestion, Mr. Doe, but we believe you will agree that under the circumstances the expense would not be justified."

Simplify Technical Explanations

The explanation of minimum monthly charges at one time proved to be extremely difficult for us to put in writing. The strange thing was that the job seemed easy to do when we were talking face to face with a customer. We then decided to "write as we talked." The following was in reply to a doctor who had written us at length asking for an explanation of the basis for our minimum charge:

"Thank you, Doctor Doe, for writing about the minimum charges for gas service and for your payment of $3.64.

"As a professional and business man, you realize that every company has certain fixed charges. In our business, every account involves a number of necessary monthly operations. These are: reading the gas meter, preparing the bill, mailing it,

and bookkeeping procedure. Our minimum charge is 60 cents monthly for each account on the General Classification No. 1. For this amount, two therms of gas are available for your use.

"While it is true that you have used gas in your Bunsen Burner for about forty minutes in the past four months, the gas has been available for your use 2,880 hours. Any time during the day or night that you may have needed to see a patient at your office, gas was at your command.

"To bring this constant service to our customers requires the operation of our gas plant and distribution system twenty-four hours a day, every day in the year. Employees are on hand to meet any situation which may arise, and emergency service calls are promptly answered day or night.

"As a fair-minded person, Doctor Doe, don't you agree that for value received the charges are fair?

"We appreciate the privilege of explaining the minimum charges."

This business of "write as you talk" is not a complicated technique, and actually, the very simplicity of it is amazing. Here are a few requisites we try always to remember:

1. You should like people.
2. Believe what you write—be sincere.
3. Write to people as you would talk to them face to face.
4. Just as your personality gets into your conversations, be sure to get it into your letters.
5. Strive for the human touch in your letters, but don't overdo it—don't gush!
6. Try to write as the customer does, using some of his language.
7. Avoid any note of impatience or sarcasm.
8. Be sure to answer all of the questions the customer asks.
9. Be sure that your words are short and natural so that the average person will know their meaning.
10. Try to get out of the "groove" and have the letter sparkle with originality.
11. Make a diligent effort to have interest sustained from the start to the end of the letter.
12. View the entire letter as a good will builder for the Company (if the letter might tear down good will in your opinion, don't sign it, write another one—a better one).
13. Remember that the letter is you *talking* —not just writing.

"Write as you talk—customers like it" —you will too!

Memo to Presidents . . .

RE: IN-SERVICE TRAINING FOR AGRICULTURAL WORKERS

WHY: Farmers consider county agents, vocational agricultural teachers and other agricultural workers excellent sources of information on almost all phases of farm operation.

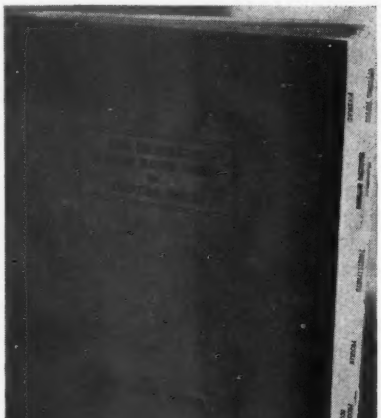
With most farms on power lines, more farmers now ask their advice on electrical equipment—what type to buy, and how to use it. Naturally you're interested in their ability to answer these questions correctly.

HOW: A committee of agricultural extension personnel and utility farm executives has prepared an intensive farm electrification training course for these workers. The course will give them valuable training in fundamentals of electricity, wiring, lighting, water systems, electric motors, freezing equipment and other applications.

This training program is presented in the manual shown at the right. Factual, comprehensive, it can easily be adapted to courses of any length.

WHERE: It is suggested that the course be presented at agricultural colleges or experiment stations, where suitable facilities are available. Courses can be planned jointly by extension workers and utility representatives, to assure the best possible course for local conditions.

WHEN: The sooner the better, for your long range rural development program. Agricultural workers taking this course will gain an increased sense of the value of electricity in farming. They will be far better equipped to provide informed advice on the use of electrical applications, and thus better fulfill their responsibilities to farm people.



In-Service Training Manual – available from EEI, at $1.50 per copy.

EDISON ELECTRIC INSTITUTE

420 Lexington Ave. New York 17, N. Y.

AGA-EEI Accountants Hold Lively Conference

(*Continued from page* 148)

sented and the discussion was confined to an informal exchange of ideas and experiences.

The Customers Activities Group met in a single session Wednesday morning. Three papers or reports were presented and discussed. The first, entitled "Write as you Talk—Customers Like It," by C. L. Sullivan, The Peoples Gas Light & Coke Company, was an effective plea for using only simple colloquial English in correspondence with, or bulletins and notices directed to, customers. The second paper by C. L. Havener, Consolidated Edison Company of New York, Inc., dealt with "The Value of the Credit and Collection Department to the Company and to the Industry," bringing into proper focus the significance of this function. The third report, embodied in a printed document of some 66 pages with numerous illustrations, described the newest "Developments in Office Devices and Equipment."

The Customers Activities Group meeting closed with a demonstration by C. L. Titus, General Manager, and J. S. Kemp, Engineering Advisor, Magnetic Recorder Division, Armour Research Foundation of Illinois Institute of Technology, Chicago.

The Materials and Supplies Committee meeting on Wednesday morning concerned itself principally with a paper on "Purchasing and Stores Accounting" by D. M. Baker of The East Ohio Gas Company.

The two Plant Accounting groups in joint session on Wednesday morning heard a paper on "Plant Accounting and Continuing Property Records" by H. B. Hardwick, The Commonwealth & Southern Corporation, originally presented at an accounting conference of the Southeastern Electric Exchange at St. Petersburg, Florida, in March, 1946, which was read by G. H. Eilers, The Cincinnati Gas and Electric Company. A supplementary paper describing certain applications of Mr. Hardwick's ideas was given by A. W. Egger, Central Ilinois Light Company.

Comments of departing participants without exception expressed their deep satisfaction with the value of the meeting and most declared that they had learned at least one or two things which alone would have made the trip worth while. Many said that it was the most successful conference in the series to date.

Progress Report of

EEI-AEIC Joint Committee on Branch Circuit Protection

(The following is a progress report of the studies and investigations now being made by the EEI-AEIC Joint Committee on Branch Circuit Protection. This Joint Committee was appointed on December 12, 1946, and, at its organization meeting on January 10, 1947, working groups were organized and assignments were made. Since then there have been many meetings of the working groups to discuss work in progress and to determine technical facts which will form the basis for recommendations of the Joint Committee.)

THE GREATLY expanding use of electricity today presents problems to all branches of the electrical industry. These general problems affect all who are vitally concerned with the electrical industry, including utility, manufacturer, electrical contractor, insurance and inspection groups.

During recent years all of these interested groups have cooperated to meet the greatly expanded industrial use of electricity occasioned by the war. This has resulted in some very important engineering studies of industrial electrical circuit distribution facilities. Consequently there have been developed many new and improved designs of commercial circuit equipments involving higher voltages, increased capacities and resulting in better space factors. All this has resulted in better and more economical installations of industrial electrical systems.

Expanding Residential Circuits

Little engineering work, however, has been done in connection with residential electrical installations. In the last twelve years the use of residential electrical energy has more than doubled. At present the national annual average is more than 1300 kilowatthours per residential customer. Indications are that this average will be greatly exceeded within the next few years, in fact, in some areas already averages of as high as 5000 to 6000 kilowatthours per year are not uncommon. Such a high general use is understandable in view of the equipment now available, such as ranges, water heaters, refrigerators, air conditioning equipment, and hundreds of utilization devices, with probably still more to come as American industry hits its stride.

It appears, therefore, that engineering development, as it affects the residential installation up to the present time, has largely been devoted to the utilization equipment, and the wiring installations for the connection of such equipment has been neglected.

The design of residential wiring installations involves such matters as voltage regulation, voltage dips, adequate capacity of branch circuits, and overcurrent protection to branch circuits and equipment. All of these problems are complicated to some extent by the increasing use of motorized equipment which has steadily increased in size, especially within recent years. This introduces a very serious problem in providing proper branch circuit design to handle starting currents, permit full use of the capacity of the branch circuit and still provide proper overcurrent protection.

Capacity and Overcurrent Protection

There are two particular problems concerned in connection with branch circuit design. One is the capacity of the circuit itself; the other, the matter of overcurrent protection of the circuit. Also to be considered are: size of conductors, insulation of conductors, voltage of the circuit, use of multi-wire branch circuits and the very important problem of what types of overcurrent devices shall be used to provide protection to these circuits.

It is most important that, in studying the many details of residential wiring installations, proper recognition be given to the broad perspective of the constantly increasing use of electricity. The many improvements which have resulted from recent technical developments should be applied to improving the performance and over-all economy of residential installations.

Therefore, with this broad perspective in mind, the Joint Committee feels that a thorough engineering study and analysis should be made of all phases of the problem involving the use of electricity in homes.

Organization of the Joint Committee

At a meeting of interested parties representing the Light and Power Industry in New York on November 14, 1946, plans for the organization of the Joint Committee were made, this committee to be organized under the guidance of the Engineering Division General Committee of the Edison Electric Institute and the Association of Edison Illuminating Companies.

At a meeting in New York on December 12, 1946, the organization of the EEI-AEIC Joint Committee on Branch Circuit Protection was completed. Its membership consists of Messrs. W. G. Knickerbocker, H. K. Sels, and E. V. Sayles representing the Edison Electric Institute, and Messrs. A. J. Allen and G. M. Armbrust representing the Association of Edison Illuminating Companies. The Committee appointed Mr. Sayles chairman and Mr. H. E. Kent of the Edison Electric Institute as secretary. Mr. O. K. Coleman was appointed a consultant to the Committee.

Scope of Work of the Joint Committee

The duties of the Joint Committee are to conduct a fundamental engineering study of the overcurrent protection problem as it relates to branch circuits, including a re-examination of the basic objectives of such protection and the best methods of attaining them, with due regard to the effects of the trend of heavier capacity systems to supply increasing loads.

Organization of the Work of the Joint Committee

At a meeting of the Joint Committee held in Cleveland on January 9-10, 1947, the complete scope of work was discussed, principal subdivisions of the various working assignments were de-

termined, and the details of these assignments were outlined. While there may need to be certain supplementary additions to or changes in the work of the various groups as the study progresses, the following represents the working groups as now constituted:

I. *Survey Division*

The work of this division includes the formulating and circulating of such inquiries as are necessary to secure data relating to fires attributed to an electrical origin and their relation to total fires of all origin, together with the analysis of this data and the determination of the extent to which the data justifies the use of branch circuit protective devices of a non-tamperable nature. The inquiries may indicate that, in order to accomplish these results, it will be necessary to secure a more detailed analysis of certain data, requiring additional inquiries and field investigations.

II. *Educatonal Division*

Of major importance in this work is speculation relative to what the future home using 5000 to 6000 or more kilowatthours per year may need in the way of wiring to adequately supply the demands that those kilowatthours will produce. This will involve a consideration of the number of house circuits and the probable demands on the various types of circuits caused by major appliances and other utilization devices of the future. This division should summarize its findings for the guidance of the Joint Committee and its working groups.

This division should also be concerned with the uncovering of facts, reports, test data or other information previously published or available which would be helpful to the working groups in carrying out their assignments.

III. *Technical Division*

The work of this division covers studies, tests, recommendations and reports of a technical nature necessary for factual conclusions relative to the branch circuit overcurrent protection problem. It should include the development of fundamental principles of circuit protection, considering not only the present state of the art and customers' requirements, but also giving due consideration to expected trends in loads and service requirements.

(Note: The Joint Committee recommends that the initial scope of these studies be limited to branch circuits of 30 amperes and less in dwelling occupancies including single and multi-family dwellings and individual apartments.)

The work of the Technical Division has been subdivided into three groups. These groups, together with the outline of their duties, are as follows:

A. *Capacity of Branch Circuits*

Develop recommendations covering the desirable nominal rating of branch circuits.

These recommendations should be based upon studies of data already available and other supplementary tests as may seem necessary.

B. *Branch Circuit Protection Requirements*

Determine the requirements of adequate branch circuit protection against overload and short circuit.

This study should include the maximum rating of the protective device together with the extent to which it must protect for inrush currents in excess of the nominal rating of the circuit as determined in III-A.

C. *Branch Circuit Protective Devices*

Make a study of the protective devices available and under development by manufacturers or others.

This study should lead to a determination of what devices will meet the basic requirements determined in III-B, and, in addition, the devices should be examined with respect to their degree of tamperability.

Committee Objectives

As the result of many meetings and discussions of the working groups, the committee objectives have become more clearly defined. Based on the general perspective stated in the introduction to this report, these objectives can be stated in the form of questions which are typical of those now being studied in connection with the design and protection of a general purpose branch circuit:

1. In view of the general trend toward the use of larger appliances:

(a) What is the proper capacity of a future general purpose residential branch circuit?

(b) What is the proper voltage or combination of voltages to be employed in the design of such a circuit?

(c) What is the proper size of conductor to be used in the design of such a circuit?

2. What are the fundamental electrical requirements of the overcurrent protective devices for future residential branch circuits?

3. What factual information can be secured from available records as to the number and causes of fires of electrical origin?

4. To what extent are tamper-resistant features necessary in overcurrent protective devices for branch circuits.

5. To what extent do available overcurrent protective devices meet the proper requirements for branch circuits?

Progress to Date

During the latter part of January of this year, appointments were made to the various working groups as outlined above. The personnel consists of seventeen engineers who are now actively working on their assignments and will present reports for discussion with the Joint Committee as soon as current surveys, tests and studies will permit. The status of the work to date is approximately as follows:

1. The Survey Division is preparing a study and tentative report of the number of electrical fires and their relation to branch circuit protection. This study is being based on an inquiry titled "Customers Branch Circuit Protection Survey" sent to member company executives of the EEI and AEIC on January 16, 1947.

2. The Educational Division is studying the probable effects of larger appliances and utilization devices on the number and size of future general purpose branch circuits.

3. The Technical Division is conducting a series of tests and studies to determine the proper capacity of future branch circuits and the characteristics of their protective devices, with due regard to the effects of heavier loading conditions. A study is also being made of present protective devices as to their suitability to meet the requirements of future branch circuits.

* * *

In summarizing this report, it is apparent that the groundwork has been laid for a comprehensive study of the entire subject of branch circuits for residential wiring. The study is only now under way and there is much work yet to be accomplished. The work to date has developed some very interesting possibilities which, it is believed, will lead to concrete engineering recommendations when these studies are completed.

It is proposed, therefore, to continue the work now under way until a report can be completed giving definite recommendations for improving present branch circuit design and protection.

Progress Report No. 6

Fundamental Investigation of Graphitization of Piping

CONDUCTED BY JOINT EEI-AEIC SUBCOMMITTEE ON GRAPHITIZATION OF PIPING
L. E. HANKISON, T. E. PURCELL, ALEX D. BAILEY, *Chairman*
SABIN CROCKER, *Secretary*

March 1947

FIVE previous progress reports on the "Fundamental Investigation of Graphitization" have been distributed in mimeograph form to those interested and published in the October 1943, April 1944, October 1944, July 1945, and February 1946 issues of the Edison Electric Institute BULLETIN. The original and first-supplementary programs at Battelle Memorial Institute have been substantially completed and it is now possible, with the aid of these findings and those of independent investigators made available through ASME papers* and otherwise, to give reasonably definite answers to a number of the more important questions.

Summary of Results to Date

Most of the major objectives of the EEI-AEIC program have reached a stage of practical fulfillment. A commercial steel can now be specified with confidence that it will resist the usual graphitization process in present power plant operations—even at somewhat higher operating temperatures in the neighborhood of 1000 F. The important question of deoxidation practice can be handled and by the judicious use of at least one alloying element—chromium—a way is provided for removing any restrictions on that practice, thus materially simplifying the procurement of steel pipe and castings. It is also known that such a steel can be welded, fabricated, and installed in power stations by conventional methods. Sampling methods are available by which the present condition of a steam line can be ascertained with reasonable accuracy, and judgment of proper repair or replacement procedure, in view of the findings, rests on a sound basis. By means of kinetic methods of following the course of graphitization in selected samples, the effects of the more important factors of graphitization can be handled on a reasonably sound quantitative basis. This assists in the interpretation of test results, in fact must become an element of such interpretation if the true perspective is to be had or if test results are to be correlated with service conditions. The latter is particularly desirable for setting safe operating temperatures for steels of the more readily graphitizable type. Stress-relieving treatments have been devised which seem capable of avoiding the segregated type of graphitization in moderately graphitizable steels and minimizing the formation of scattered graphite.

The bare recital of these points indicates substantial progress but, more broadly viewed, the question of steel for steam lines is still in a state of flux. For one thing, the power stations are pressing for higher operating temperatures of 1000 F, or even 1050 F. On all sides, a single "high-temperature" steel is desired for temperatures up to 950 or 1000 F and it appears that commercial considerations will force such an issue. Kinetic studies show that temperatures of 1000 F or more mean about a five-fold increase in the rate of graphitization over 900F, though perhaps the two most serious questions that are raised are resistance to scaling and creep strength of the steels from which the selection will be made. With the higher alloy contents needed for resistance to scaling, stabilizing the carbide against graphitization, and giving sufficient creep strength, welding and other fabrication operations become more difficult for operating temperatures above 1000 F. Consequently, a single general purpose steel for temperatures above 1000 F seems out of the question until more experience is obtained with the pioneer installations now underway.

Items for Further Investigation

Certain specific items seem to warrant some further investigation in a limited extension of the research project at Battelle. Continued heating of the molybdenum-titanium and molybdenum-vanadium specimens, and of the various chromium-molybdenum specimens for another year or so at 1125 F would be desirable. The heating period so far has been too short for establishing by chemical kinetics the graphitization characteristics of steels possessing such good resistance to deterioration of this sort.

Experience with the chromium-molybdenum steels, though considerable by now, does not yet point definitely to the one best composition, all things considered, nor does it cover conditions of stress like those described by R. W. Emerson in his 1945 ASME paper. As stated in Battelle's 1946 ASME paper, their efforts to evaluate the influence of elastic stress and plastic deformation were not completely satisfactory. While those factors were positively included in the experiments, the test results produced only negative results. It has been suggested that further tests be made by loading tensile bars at different temperatures until Luders lines appear, simulating Emerson's slip planes, and then heating the bars in a graphitization furnace to see what develops over various periods of time. Since this is doubtless the least understood phenomenon of graphitization, it is felt that some further investigation along these lines is worth while.

The specimen of vanadium-molybdenum steel tested, which contained 0.23 per cent vanadium and 1.15 per cent molybdenum with only about ½ lb of aluminum per ton, gave very promising

*One or more sessions on graphitization were held during the Annual Meetings of the American Society of Mechanical Engineers in each of the years 1943, 1944, 1945, and 1946. Reprints of the 1943, 1944 and 1945 groups of papers have been distributed in bulletin form as well as printed in the *Transactions of the Society*. The same course is underway with the 1946 papers.

results in that it developed no graphite after 4000 hours at 1125 F. This class of steel warrants further consideration for high-pressure steam-line applications. From limited creep data, it seems reasonable to expect that the combination of molybdenum and vanadium is very effective on high-temperature strength. For example, little gain in creep strength is secured in going from 0.5 to 1.0 per cent molybdenum (and none at all for the low stresses in steam lines) but the addition of vanadium should be of considerable help. On the other hand, neither alloy adds resistance to scaling and, for the new steam temperatures, the necessary amount of chromium would be added for protection.

The elements in these steels are thought to function individually about as follows:

Molybdenum, vanadium, and chromium are all recognized as elements that tend to give alloy steel superior strength to plain carbon steel at elevated temperatures and, if present in proper amounts, doubtless effect carbide stabilization. The three together would contribute the necessary properties without serious question. On the other hand, these alloys make welding more difficult and, by increasing the air-hardening characteristics, will require more careful handling in bending, stress relieving, and the like. On this account, the amounts added should be kept at a minimum. It may be noted that the vanadium would have to "pay its way." It is thought that there is a good chance that this will be true by its effect on strength; by reducing the wall thickness the operations of fabrication and welding will be correspondingly cheaper while the lower weight will tend to offset the higher alloy cost.

Titanium is very much of an unknown quantity in these steels, except as a carbide stabilizer, and it might be well to include it more positively in future work. Possibly a more fruitful study would be of the use of aluminum to lower the air-hardening tendency of the chromium steels in an attempt to improve their handling characteristics in welding and fabrication. A judicious addition might do a lot of good. With sufficient chromium present it is felt that the aluminum could not produce graphitization.

It has been suggested that wrought steels should be tested with both vanadium content and molybdenum content varied. In particular, it would be advisable to try to determine the minimum vanadium content required to provide satisfactory graphitization resistance, as well as to try to determine how this amount would be influenced by deoxidation practice.

Further, tests designed to throw more light on the question of what microstructures are resistant and what are susceptible to graphite formation, would be in order. In a project on tool steel, considerable attention has recently been paid to the effects of composition, deoxidation, and structure on graphitization tendencies and the teachings of that work might be used to advantage in clarifying the problem with pipe steels and to "explain" the concentration of graphite at the A_1 isothermal line of a weld. Incidentally, it is the acicular type of structure that was found to be particularly prone to graphitize. That is the structure, it may be recalled, that is apt to form at the A_1 isotherm (possibly martensite in some cases, but more likely bainite in most) and it is thought that this condition may be associated with graphite segregation at that location. Tapered bars or cones of plain-carbon, carbon-molybdenum, and chromium-molybdenum steels, differentially cooled from elevated temperature to provide a range of microstructures, would be placed in the graphitization furnace. It is known that a graphitizable steel shows copious amounts of graphite in this test in 100 hours at 1300 F and this might be developed into a short-time test for pipe steels. If a given steel failed to graphitize after a predetermined time, when having the most favorable structure for graphitization, it would be concluded that it is satisfactorily resistant. The general purpose of the tests would be to probe further and more quickly into the relation between composition, structure, and graphitization.

A particular steel, which it is understood the English use in high-pressure steam-line applications at temperatures over 950 F, contains about 0.10-0.17 per cent carbon, 0.50-0.60 per cent molybdenum, 0.20-0.27 per cent vanadium, 0.40-0.60 per cent manganese, and 0.30 per cent maximum silicon. This steel is reported to be weldable, and tests of its resistance to graphitization and of creep properties at 1000 and 1100 F would be desirable.

Arrangements have been made for continuing the Battelle investigation a few months more on a limited basis to obtain a longer test period on the graphitization resistant steels that already have been in the furnace for about a year. The problem now seems to be well enough understood to warrant leaving any further research work on new materials to the steel mills, valve manufacturers, and piping fabricators. Operating companies can continue such sampling programs as are necessary for existing welded joints in susceptible materials.

William G. Hickling

WILLIAM G. HICKLING of Binghamton, N. Y., vice-president and general manager of the New York State Electric & Gas Corp., died of a cerebral hemorrhage April 10 at Memorial Hospital in Syracuse. He was 50.

Mr. Hickling came to Binghamton from Erie, Pa., in April, 1941, when, as a vice-president, he took charge of operations and construction for the utility. The construction program included the building of a plant at Bainbridge, expansion of the Westover plant and other projects still pending.

In 1945 he became general manager. He also was a member of the firm's Board of Directors. Mr. Hickling coordinated the firm's operations throughout the area served by the company which includes parts of 43 upstate counties, and supervised its power stations and transmission lines. He also directed the work of the company's five divisional managers.

Born Feb. 19, 1897, at Wallingford, Conn., Mr. Hickling spent most of his childhood and youth in Dawson, Yukon Territory, Northwest Canada, with his parents. He was graduated from Dawson High School and in 1917 from Sheffield Scientific School at Yale University. From August, 1918, until the following December, he served with the army signal corps.

Mr. Hickling joined the Penn Public Service Co. at Johnstown, Pa., as an engineer, Oct. 10, 1919.

In 1936 he became vice-president and general superintendent of operations of the Pennsylvania Electric Co. of Johnstown. The following year he moved to Erie and was made president of the firm's affiliate, the Erie Lighting Co., at the same time continuing in the other post.

Until he came to Binghamton, he also was a director of the Keystone Public Service Co. of Oil City, Pa.

Mr. Hickling invented and patented several electrical relay improvements.

Reflecting Customer Attitude Accurately to Top Management

By F. J. Porter, Jr.
Consolidated Edison Co. of New York, Inc., New York, N. Y.

A speech presented at the Joint National Conference of Electric and Gas Utility Accountants, Buffalo, N. Y., April 7 – 9, 1947

ONE of the problems confronting the management of every business organization, large or small, is the establishment of an effective means of communication between the policy making executives at the top and the employees at the bottom of the organization who are responsible for, or are actually performing, operations. Down along this line must flow policies, orders and plans and back up again must travel reports of results, ideas, suggestions and reactions. This problem is by no means new. It has existed as long as man has banded together in groups to accomplish by joint effort that which he finds impractical to complete alone, but it has become increasingly difficult to solve.

Specialization in Industry

As organizations have grown larger and larger, specialization has become necessary to accomplish results. Intermediate levels of supervision have been established and top management has become further and further removed from the rank and file. In recent years, this problem has been referred to frequently in literature dealing with employee-management relations, indicating the concern which top management is beginning to feel over its lack of knowledge of employee attitudes and its realization that there are many barriers to the free flow of information up and down the line of communication within the organization.

Relatively little, however, has appeared in print on the subject of transmitting customer attitudes from those in possession of this information through their everyday contacts to the policy makers at the top of the organization. While the deliberate sampling of public opinion has been used by some companies with good results, it has not been widely adopted. Too many managements have overlooked the pools of information existing in their own companies which can be tapped by proper organization and progressive development.

In this "land of the free" most men resent compulsion. This fact requires the top executives of businesses with which customers feel they must deal, to make special efforts to be well acquainted with the real attitudes of their customers in order that policies and practices may be so established as to command their willing acceptance. The gas and electric industry is such a business for it is only the "one in a thousand" customer who feels that he is in a position to turn to a satisfactory substitute for his utility services. The top management of each gas and electric company, therefore, has a very vital need to know accurately how his customers regard his company, for he is daily confronted with the making of decisions which will affect relations with them.

This need has long been recognized and many managements of gas and electric companies have developed methods which they believe reflect the opinions of their customers. The study on which this report is based was undertaken in order that the methods now in use in individual companies might be more generally available to all in the industry. It is hoped also to present new ideas to those now having established means of evaluating customer attitude and to offer to those who do not, a program which will help to bridge the gap between the customers and the policy-making group of top executives.

Industry Experience

The first step in the study of means of reflecting customer attitude to top management was to determine the extent to which the gas and electric industry is presently recording, evaluating and distributing information about the attitudes of its customers. The questionnaire shown in Fig. 1 was forwarded to forty-seven gas, electric, and combination companies whose representatives are active in the work of the Customer Activities Sections of the American Gas Association and the Edison Electric Institute. The response to the questionnaire was most gratifying as thirty-seven were returned within a short period of time. These replies came from companies widely spread throughout the United States and included one from Canada.

They represented the practices of companies varying in size from 30,000 to 3,500,000 meters and totaling 7,800,000 gas and 10,500,000 electric meters. Although every company in the country was not represented, it is believed that the sample is sufficiently inclusive to reflect the general practice of the industry in reporting customer attitude, and the observations which follow are based on this sample.

While fifteen companies stated that they had practically no organized programs of reporting customer attitude, many of these evidenced interest in the study, indicating a recognition by their executives that a problem exists. No company appeared to have a complete and comprehensive method of reflecting accurately to top management the attitude of its customers, although many have developed partial methods of evaluation, believing that in this way a sufficiently accurate picture is produced. Few companies give widespread distribution to the information developed and much of it appears to get no further than the immediate department head concerned. The answers to the questionnaires emphasize quite strongly the general conclusion that the industry still needs to give much thought and consideration to the development of accurate and comprehensive methods of obtaining, evaluating and reporting customer attitude.

Collecting Information

A wide variety of methods are used by the companies collecting information about customer attitude and reaction.

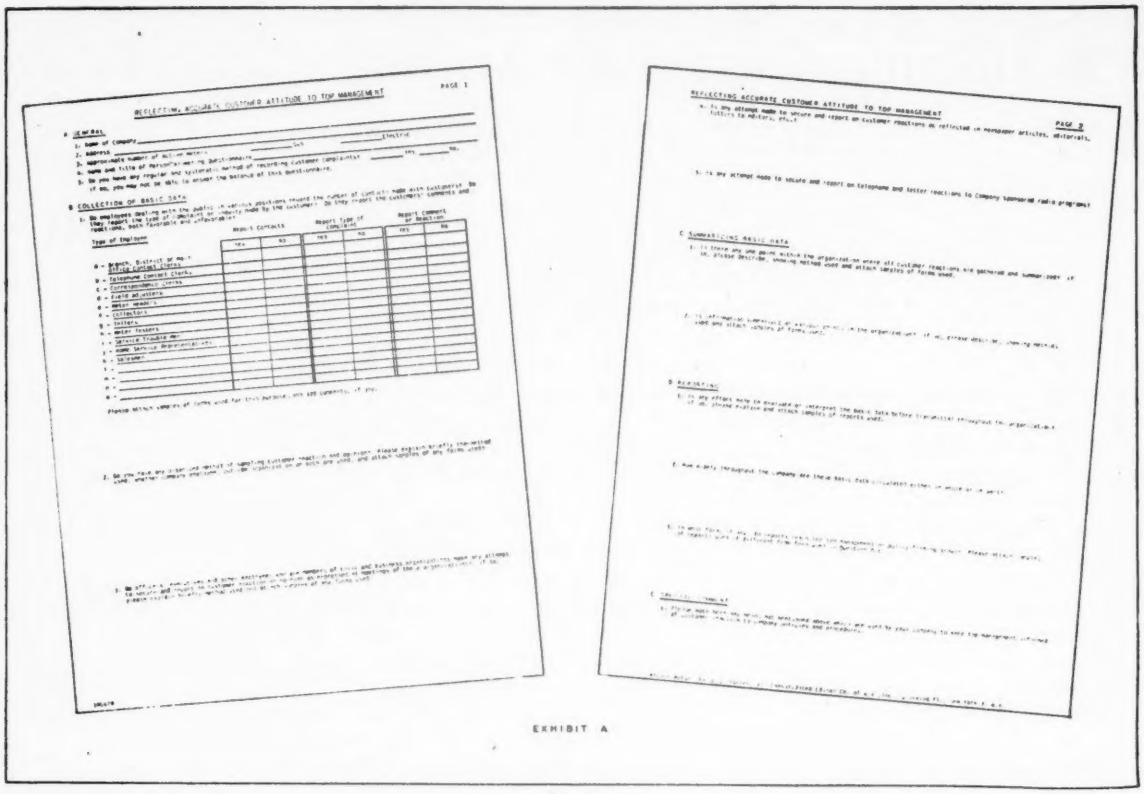

REFLECTING ACCURATE CUSTOMER ATTITUDE TO TOP MANAGEMENT
PAGE 1
A GENERAL
B COLLECTION OF BASIC DATA
REFLECTING ACCURATE CUSTOMER ATTITUDE TO TOP MANAGEMENT
PAGE 2
C SUMMARIZING BASIC DATA
D REVIEWING
EXHIBIT A

Fig. 1

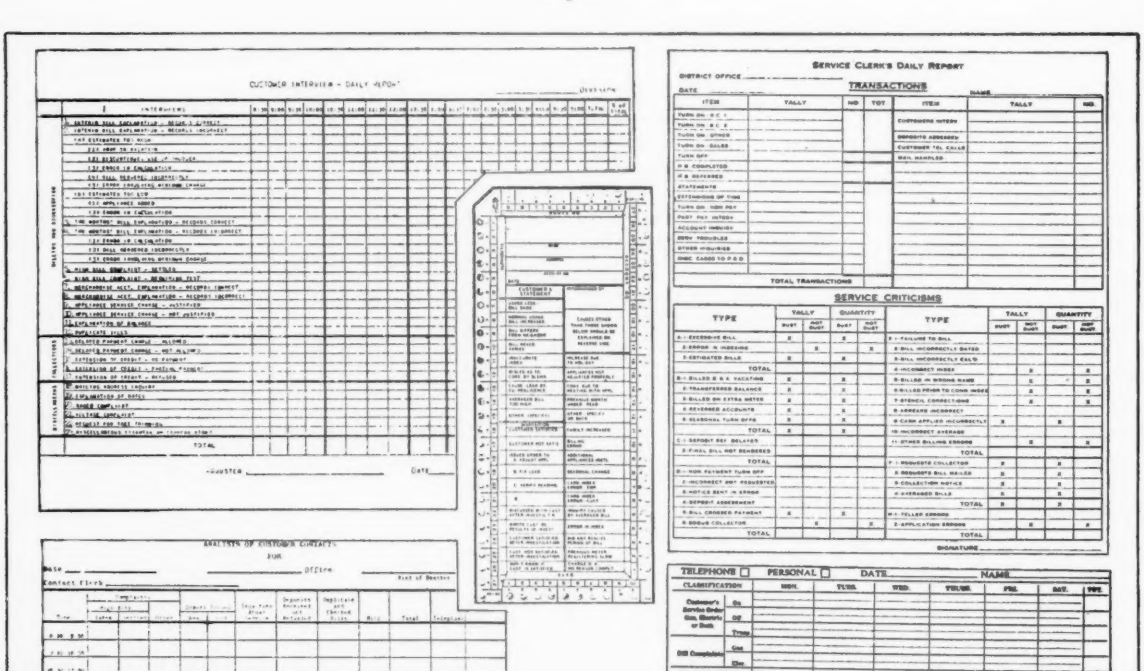

CUSTOMER INTERVIEW - DAILY REPORT
SERVICE CLERK'S DAILY REPORT
TRANSACTIONS
SERVICE CRITICISMS
ANALYSIS OF CUSTOMER CONTACTS
TELEPHONE
PERSONAL
EXHIBIT B

Fig. 2

These methods appear to fall into four general groups:

1. Through employees in their daily business contacts with customers;
2. Through employees in their social and organizational contacts;
3. Through reactions expressed in the press;
4. Through deliberate sampling of customer opinion;

To these, it is necessary to add:

5. The attitude of customers as reflected by complaints made to regulatory bodies.

A systematic collection of information from these sources will, it is believed, present a complete picture of customer attitude, especially when carried on for a sufficient time to permit of comparison with other periods and different operating conditions. A detailed consideration of each source follows.

Daily Business Contacts of Employees

The daily problems which arise in carrying on the Company's business, require that certain employees be in close contact with the customers. Although the titles given to these employees may vary from company to company, they appear to fall into two general groups. The first group consists of those assigned to the receipt of orders, inquiries and complaints and their proper disposition and settlement. Typical titles in this group would be service clerk, branch or district office clerk, telephone service clerk, correspondence clerk and field adjuster. These employees explain company policy and try to solve customer problems. Because these contacts are usually the result of the customers' actively seeking the company to lay problems before it, they reflect quite clearly the things which are troubling customers, even though their number may be small.

The industry quite generally appears to keep records of contacts made by these employees and the type of complaints and inquiries made by customers. This record is usually in the form of a tally sheet for each employee upon which he records complaints under a number of different general groupings. Some companies are satisfied with a weekly reporting, others desire the information on a daily basis and one even keeps a record on a half-hour basis, presumably to provide data on which to establish a manning schedule for contact desks and counters. There is considerable uniformity in the specific types of complaints and contacts statistically recorded, and even terminology shows a remarkable similarity. Fig. 2 presents a number of the forms utilized by different companies for this purpose.

The second group of employees contacting the public are working at the customer's premises reading meters, collecting bills, testing meters, turning service on or off, and repairing appliance and service failures. Typical titles are meter tester, meter reader, collector, change-of-consumer man, serviceman and repairman. These employees do not appear to record contacts in as many companies as the first group, and complaints and inquiries in even fewer. These field employees specialize in one type of work, and usually are not trained to enter into a discussion of company policy and practice. In most companies, they are instructed to request the customer to address his complaint to the company office where it will receive proper consideration. A few companies give employees in this group a form upon which they can record customer inquiries or complaints, which then will be answered by trained employees either by call or correspondence.

It should be remembered that employees in this group, when calling at the customer's premises on company business, are looked on by the customer as representatives of the company and as such, are exposed to many comments, complaints and inquiries which are indicative of customer attitude. It is believed that companies which do not make an effort to use this group of employees in their determination of customer attitude are overlooking a valuable indicator which may give a truer picture of overall customer thinking than that reported by the first group.

A simple form on which may be reported any comment, inquiry or complaint made would give a picture of feelings which are not strong enough to impel customers to take the positive action of approaching the company, but which nevertheless exist in their minds and which may come vigorously to the front at some future time unless removed by suitable explanation in the present. Several appropriate forms are shown in Fig. 3.

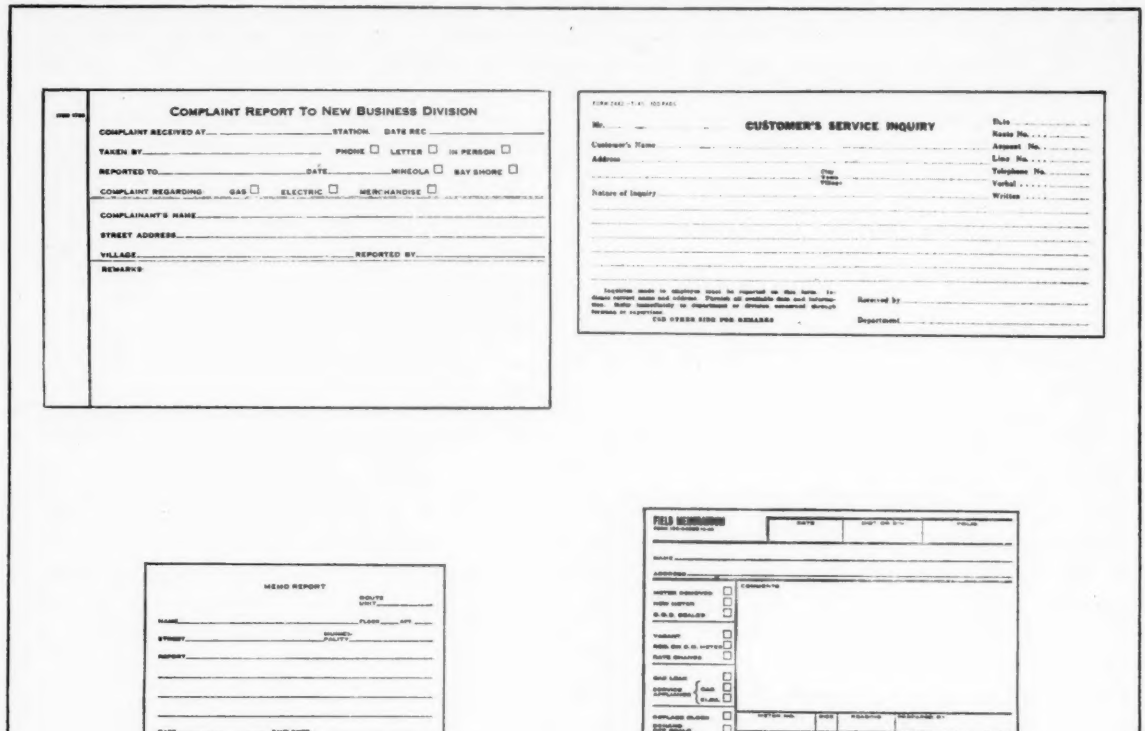
There is a distinction made between a numerical record of types of complaints and inquiries, and an indication of customer comment or reaction. Relatively few companies are making an attempt to report the latter. It is true that comment or reaction are hard to evaluate and oftentimes the customer's true attitude is not revealed in the contact. Many customers are inarticulate or reserved and may terminate the contact without an expression of their true feelings. Nevertheless, a record of comment and reaction is a useful adjunct to any accumulation of complaints and inquiries and should be included whenever possible. The simple form suggested for the field forces and illustrated in Fig. 3 might also be used by the first group of employees for this purpose.

Organization and Social Contacts

Often more can be learned about a customer's true attitude toward the company by his informal comments made in unguarded moments than in any other way. Complaints made to contact employees may reveal too critical an attitude because something has forced the customer to take positive action. Opinion sampling may show too favorable a picture due to the natural tendency of most people to avoid hurting or insulting those with whom they are talking. A recording of the comments made to or in the presence of employees while off duty in their social and organizational activities may give a more middle-of-the-road view of customer attitude.

The questionnaire answers indicate that most companies recognize this possibility, particularly as far as organizations are involved in which the employee represents the company, and have means of recording reactions from this source. These means are generally informal in nature and involve the verbal reporting of impressions. Official representatives in such organizations are generally employees holding fairly responsible positions in the company who are in a position to make their reports at staff meetings or during personal contact with top management. The use of written memoranda appears to be infrequent although several companies state that such matters are usually included in the division manager's weekly report to top management.

With the exception of one company which reports a definite form for this purpose, there is no indication that companies are attempting to gather the customer comments and reactions received by employees during their purely social contacts. It would appear that any such effort would be extremely difficult to organize, as employees off duty would have to be unusually interested in the welfare of their company to make notes of customer comment and reaction during



COMPLAINT REPORT TO NEW BUSINESS DIVISION

COMPLAINT RECEIVED AT ____ STATION ____ DATE REC ____

TAKEN BY ____ PHONE ☐ LETTER ☐ IN PERSON ☐

REPORTED TO ____ DATE ____ MINEOLA ☐ BAY SHORE ☐

COMPLAINT REGARDING GAS ☐ ELECTRIC ☐ MERCHANDISE ☐

COMPLAINANT'S NAME ____

STREET ADDRESS ____

VILLAGE ____ REPORTED BY ____

REMARKS

CUSTOMER'S SERVICE INQUIRY

Mr. ____ Date ____

Customer's Name ____ Route No. ____

Address ____ Account No. ____

City Town Village ____ Line No. ____

Nature of Inquiry ____ Telephone No. ____

Verbal ☐ Written ☐

Inquiries made to telephone must be reported on this form. To obtain correct name and address. Furnish all available data and information. Refer immediately to department or division concerned through foreman or supervisor.

Received by ____

Department ____

USE OTHER SIDE FOR REMARKS

MEMO REPORT

ROUTE ____

NAME ____ FLOOR ____ APT ____

STREET ____ BUILDING FACILITY ____

REPORT ____

DATE ____ EMPLOYEE ____

DO NOT WRITE BELOW THIS LINE

FIELD MEMORANDUM

DATE ____ OUT OR IN ____ HOUR ____

NAME ____

ADDRESS ____

METER REMOVED ☐ NEW METER ☐ C.O.D. SEALED ☐ COMMENTS

TARIFF ☐ RATE ON C.O. METER ☐ RATE CHANGE ☐

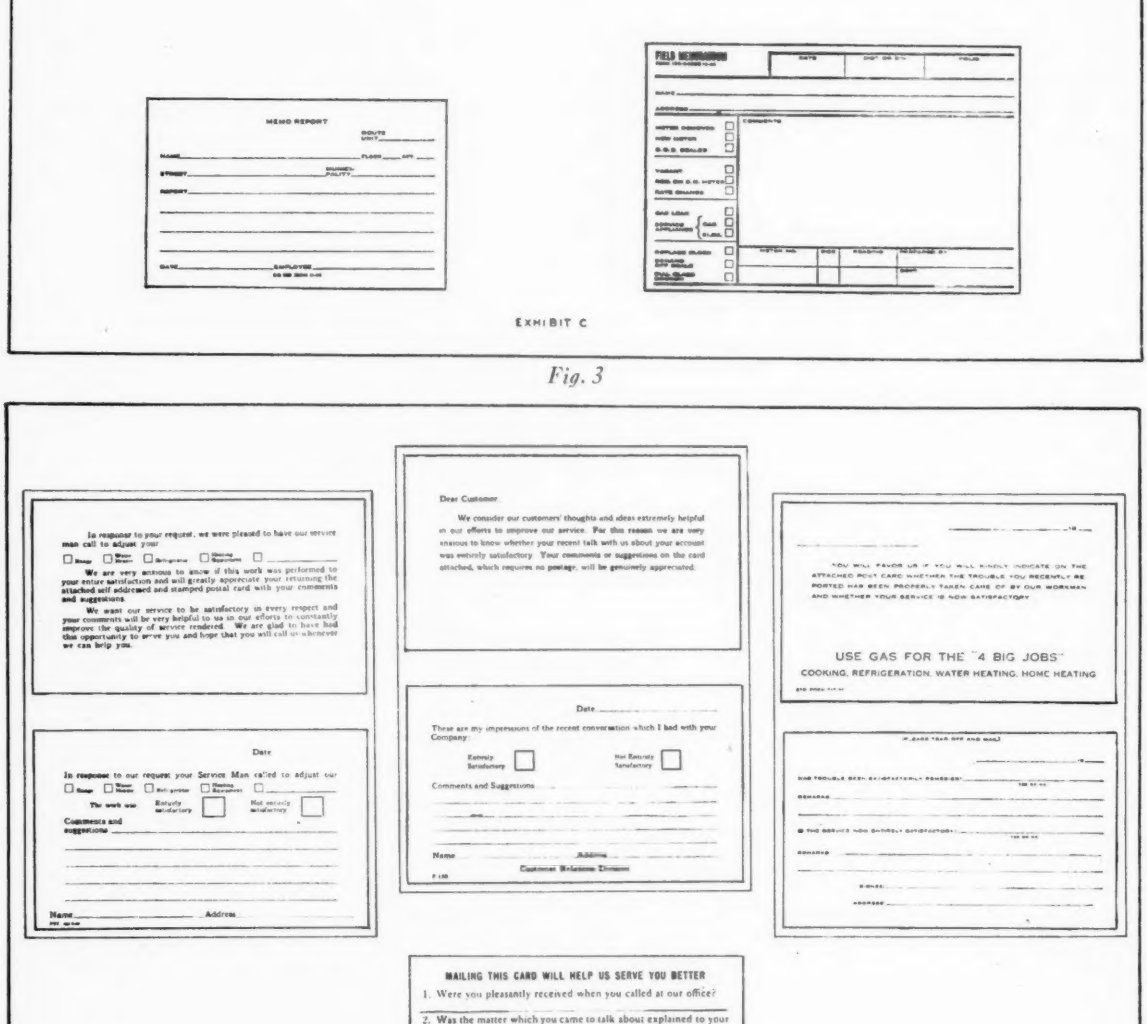
GAS LEAK ☐ EXPOSED APPLIANCES ☐ GAS ☐ FLAME ☐

REPLACE FUSES ☐ CHANGE SEALS ☐ TEST CLOSE ☐

METER NO. | DIAL | READING | REFERENCE BY ____ DATE ____

EXHIBIT C

Fig. 3



In response to your request, we were pleased to have our service man call to adjust your

☐ Range ☐ Water Heater ☐ Refrigerator ☐ Heating Equipment ☐ ____

We are very anxious to know if this work was performed to your entire satisfaction and will greatly appreciate your returning the attached self addressed and stamped postal card with your comments and suggestions.

We want our service to be satisfactory in every respect and your comments will be very helpful to us in our efforts to constantly improve the quality of service rendered. We are glad to have had this opportunity to serve you and hope that you will call us whenever we can help you.

Dear Customer:

We consider our customers' thoughts and ideas extremely helpful in our efforts to improve our service. For this reason we are very anxious to know whether your recent talk with us about your account was entirely satisfactory. Your comments or suggestions on the card attached, which requires no postage, will be genuinely appreciated.

____ 19 ____

YOU WILL FAVOR US IF YOU WILL KINDLY INDICATE ON THE ATTACHED POST CARD WHETHER THE TROUBLE YOU RECENTLY REPORTED HAS BEEN PROPERLY TAKEN CARE OF BY OUR WORKMAN AND WHETHER YOUR SERVICE IS NOW SATISFACTORY.

USE GAS FOR THE "4 BIG JOBS"

COOKING, REFRIGERATION, WATER HEATING, HOME HEATING

Date ____

In response to our request your Service Man called to adjust our

☐ Range ☐ Water Heater ☐ Refrigerator ☐ Heating Equipment ☐ ____

The work was: Entirely satisfactory ☐ Not entirely satisfactory ☐

Comments and suggestions ____

Name ____ Address ____

Date ____

These are my impressions of the recent conversation which I had with your Company:

Entirely Satisfactory ☐ Not Entirely Satisfactory ☐

Comments and Suggestions ____

Name ____ Address ____

Customer Relations Division

(IF GAS HAS BEEN SHUT OFF AND MAILED)

____ 19 ____

WAS TROUBLE BEEN SATISFACTORILY REMEDIED? ____

REMARKS ____

IS THE SERVICE NOW ENTIRELY SATISFACTORY? ____

REMARKS ____

SIGNED: ____

ADDRESS ____

MAILING THIS CARD WILL HELP US SERVE YOU BETTER

1. Were you pleasantly received when you called at our office? ____

2. Was the matter which you came to talk about explained to your satisfaction? ____

3. How could our service to you be improved? ____

Name: ____

Address: ____

(Must accompany if you prefer)

No. 230

EXHIBIT D

Fig. 4

their social contacts. Employee interest would be hard to sustain over a period of time and it is questionable whether such information would have much comparative value. It might be easier to organize in the smaller than in the larger company. Whether or not social contacts are reported, at least an effort should be made to include in the comprehensive picture of customer attitude, the reactions and comments picked up casually at business organizations in which the employees represent the company.

Press Reflections of Customer Attitude

It appears to be the general practice of most companies to collect information on customer attitude as reflected by articles, letters and editorials in the public press. One company prepares a daily mimeographed summary of news for the information of its executives. Many clip articles of interest and references to the company and its problems. In some companies these clippings are referred to interested executives, in others they are circulated among the top management, and one company even maintains a scrap book of items taken from the public press. Practically all companies assign regular employees to the review and clipping of newspapers, although one makes use of a clipping service.

A complete analysis of customer attitude should include any reference to the company in the public press. News reports are often the result of happenings outside the control of the company and thus may not be indicative of customer attitude, but the relative prominence given to various stories might be indicative of the editors' evaluation of public opinion. Editorial comment is valuable in determining customer opinion for the same reason, but it has a further value because of its effect in molding customer opinion.

The greatest weight should be given to letters written to the editor, which require a positive effort on the part of customers. They must feel quite strongly about the company to go to such lengths. Due allowance must, of course, be given to the erratic customer and the publicity seeker. Comment in the public press therefore would appear to have its place, small as it may be, in a complete and comprehensive evaluation of customer attitude.

Sampling of Customer Opinion

In recent years, the deliberate sampling of public and customer opinion has become much more frequent due, perhaps, to the development of improved methods of procedure. Sampling received a considerable impetus when it was found through experience that a small sample of the customer group, when properly selected, is just as effective in indicating customer attitude as a large sample. As it is possible to obtain as accurate a picture with 1,000 interviews as with 100,000, the cost of making the sampling is reduced to the point where it is within the reach of all.

Only a few companies are engaged in opinion sampling and these employ two methods. The first is the use of an inquiry form, such as a single or double postcard, typical examples of which are shown in Fig 4. It is apparent from these samples that the double card is mailed to customers following a normal contact with the company, such as an appliance repair or a bill complaint. The single card may be left at the customer's premises by the employee who responds to the call or it may accompany a letter asking for the customer's opinion. The companies which use this method believe that it gives them a good indication of the customer's reaction to the service rendered by the company.

Measuring Customer Contact Performance

It may be that a routine of this kind does more to verify employee performance than to sample customer opinion. While a favorable attitude may be indicated at the moment, the customer's basic opinion of the company may be far different. He may, as the result of the service rendered by the company, feel that he is obligated to the company, or desire to give the employee a boost. He may then express general satisfaction at the incident itself, without revealing his basic attitude. On the other hand, if he expresses dissatisfaction, it may well be that the contact has been particularly poor. As the reporting of such an expression is extremely important in the correction of poor employee performance or faulty procedure, the postcard type of sampling has value from this standpoint.

Two companies reported that they make telephone spot checks after normal business contacts to determine customer reaction. This also would appear to be more a matter of verifying employee performance than of sampling basic customer opinion, although it is probable that the customer will reveal more of his real attitude during the course of the conversation than he will put in writing on the post card.

The true sampling of customer opinion by the interviewing of customers selected by a scientific formula was reported to be done intermittently by some companies and continuously by others. The companies doing intermittent sampling quite generally employ outside organizations specializing in this type of work to make the interviews and tabulate the results. This type of sampling is very useful where a spot check of customer opinion at any given time is desired or when a specific problem or policy is under study, but it has little value as a barometer of customer opinion.

The continuous sampling process appears to be handled by either full time or part time employees. The Union Electric Co. of Missouri, St. Louis, Mo.; the Cleveland Electric Illuminating Co., Cleveland, Ohio and the Pacific Gas and Electric Co. of San Francisco, California, are convinced that sampling with full time employees is well worthwhile. Several carefully selected and trained employees interview customers in all parts of the companies' territories, reporting the reactions of the customers and their complaints and comments. In addition, they handle many minor grievances too small to cause the customer to seek the company. These samplers have discovered many conditions which were unknown to the executives of the companies, such as a high percentage of misspelled names on stencils, and thus have produced dividends unexpected at the time sampling was started. They have found a great willingness on the part of customers to talk about their utility services and have received many expressions of appreciation that the company was interested enough in the personal opinions of customers to send employees out to seek it.

The part time assignment of employees to opinion sampling reduces the cost of the survey and makes it possible to obtain a reasonable sample over a period of time without too much organized effort. It is desirable, however, that contact employees be used who, through experience, are qualified to handle the complaints which they will encounter. This eliminates the need for extensive training. The Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.; the Public Service Co. of Colorado, Denver, Colo., and the Wisconsin Electric Power Co., Milwaukee, Wis., are typical companies using the part time method, which appears to be well suited to the smaller company not needing the full time as-

signment of employees to this task.

Regulatory Body Contacts

The questionnaire did not seek information concerning the recording of customer attitude as expressed in complaints transmitted on behalf of individual customers by regulatory bodies because, in most companies, these complaints are handled directly between the regulatory body and the policy making executives of the Company. Nevertheless, they are an important indicator of customer opinion as they may imply that either the customer was not satisfied when he first approached the company or went directly to the regulatory body because he did not trust the company. In some of the larger companies where complaints are numerically large although small in relation to the number of customers, regulatory body contacts may be made with employees sufficiently far down the line to justify a statistical or detailed record, for the information of top management.

Comparative statistics of complaints to regulatory bodies should be a definite part of any report to policy-making executives, for they may indicate the degree of efficiency of complaint handling personnel as well as reflect customer opinion. They are not numerous and generally they are cleared, for control purposes, through one place in the organization, where they can be tabulated easily.

Summarizing and Evaluating Information

Information on customer attitudes is of no value to anyone if it is merely recorded by those in possession of it and then goes no further. Nor does it have any greater value if it stops at the immediate superior of the collecting employee. Only when it reaches the group of top management executives who establish policy, in such a form that it can be readily applied to problems at hand, does it justify its keeping.

A brief review of the sources of information will reveal clearly that these spring up in various parts of the organization. They each must flow into a central point which will be responsible for the collection and summarization of the information. Otherwise, information from only one source may reach top management, and erroneous conclusions, based on only one part of the whole picture, may be reached. Furthermore, pure statistics in themselves are of little value. It is only when they are related to other factors, such as changes in policy, the seasons of the year and economic conditions, that the figures come to have meaning. It is desirable, therefore, that this same central point review and evaluate the statistics in an effort to explain the reason for the trends shown. This evaluation may require comparisons with other periods of time because while it is desirable to know the number of complaints, it is equally important to know their trends upward or downward. Charts and curves may be of assistance in making the cold figures more easily appraised.

The resulting balance sheet of customer attitude is just as important a piece of information to all supervisory employees whose responsibilities include public contacts as is the financial balance sheet to those dealing with the finances and accounts of the company. For this reason, the final summary and evaluation should reach not only top management but department heads and intermediate supervision, including those who assist in supplying the basic information. First-line supervisors may well find it desirable to circulate the summary among the rank and file who, seeing the use to which it is put, may be encouraged to exercise more care in obtaining and recording accurate basic data.

Barriers To Be Overcome

Before becoming too enthusiastic about the development of a comprehensive picture of customer attitude, it would be well to review the practical aspects of the problem and to recognize that certain barriers will be encountered. These will vary with the size and nature of the company and its organizational structure.

Some of the questionnaires were returned with the comment that no organized method of reflecting customer attitude exists in the companies replying because they are small enough so that top management is able to keep closely in touch with customer attitude through personal experience. While this may be possible, the question is raised whether it is safe to assume that the picture obtained through the personal experiences of the policy-making executives is correct. The advertising industry has sought to impress on the American public the truth of a peculiar trait of human nature that "even your best friend won't tell you" unpleasant things about yourself.

The executive of the small company may well ask himself, then, whether or not his friends and those customers he meets from time to time, will tell him their real attitude toward his organization. It may not be until public resentment has progressed to the point where it comes out in positive adverse action that he finally discovers the truth about his organization. The establishment of a formal and comprehensive method of reflecting customer attitude even in the small company will be good insurance to assure the top executive that the impression he carries in his mind is a correct one.

The larger companies are confronted with another barrier which is inherent in them and which springs from the necessary specialization which accompanies size. The job of serving the customer is subdivided into many parts which frequently are assigned to different department heads and executives. This establishes numerous channels under different controls through which the information must flow to top management. The multiplicity of these channels and the personal idiosyncrasies of the individual supervisors involved, may cause a considerable distortion of different portions of the data on customer attitudes. Overcoming the barrier of departmentalism is a necessary part of the establishment of a comprehensive picture of customer attitudes.

As all managements are held accountable for costs incurred by their organizations, it may be felt that a comprehensive program of reflecting customer attitude accurately is prohibited by the need for counting pennies. It is not claimed that such a program can be produced without expense. It is believed, however, that even in the smaller companies, simple forms and careful organization will keep the cost at a minimum. Top management may well believe that the cost, whatever it may be, is well spent if it guards against complacency in policy making. It becomes in fact an insurance expenditure to protect customer goodwill, which is very expensive to regain once it has been lost.

Classifying Opinion

A much greater barrier to overcome, especially in the larger companies where many different employees will be reporting customer attitude, is the establishment of clear and concise definitions of what type of attitude is to be recorded under each category required. Opinions differ widely as to the classification of even the simpler inquiries. Customers present the same thing in many varied forms which must be recognized for what they truly are. Long hours may be spent in attempting to distinguish be-

tween complaints, comments, inquiries and reactions. When different departments are expected to report alike, this problem becomes further complicated.

Several generalities will point to methods of overcoming this barrier. The first is that the tabulation should be kept as simple as possible and with as few categories as will reflect accurately the picture desired. A careful balance must be worked out here between too few groupings which do not reflect any picture at all and too many which are impossible of accurate definition. The second approach to this problem is to draw clear definitions of what shall be included in each category. In this way, the employee records accurately and top management knows exactly what each one means. Third, the definitions should be distributed widely throughout the recording group of employees and each first line supervisor should review them carefully with his people to make sure they are thoroughly understood by everyone.

Coordination of Customer Attitude Activities

Several companies mentioned the recent establishment of a committee within each company to coordinate the collection of customer-attitude data, to prepare the evaluation, and to make recommendations for improvements in policies and procedures. This practice seems to supply the final step needed to complete the picture of reporting customer attitude to top management.

It is believed, therefore, that consideration should be given to a central committee composed of the top executives of all departments whose employees contact the public. It would be the function of this central committee to establish standards under which the data would be collected, provide for its reporting to a central point within the control of the committee, and arrange for its summarization and evaluation. This central committee should also consider the problems arising from the comprehensive picture of customer attitude thus developed and the possible solutions through revision of company policy and procedure. When the changes indicated are within the scope of their authority, they should be promptly carried out. When further executive approval is needed or differences of opinion among the committee members must be settled, recommendations should be made to top management for final disposition.

Such a central coordinating committee is a necessary adjunct to any comprehensive reporting of customer attitude and will go a long way toward overcoming the barriers previously mentioned. It will be effective, however, only when it is composed of men sufficiently high in the organization to be able to speak and act with authority.

At least one company which has tried this method of coordinating activities reflecting customer attitude has found relatively little need to refer matters to top management for decision on differences of opinion, since the heads of the major customer-contact departments are members of the committee. A study of the data collected quickly suggests the proper solutions and the necessary changes are made. The committee also is able to evaluate fairly accurately the reasons for changes in customer attitude because of the members' intimate knowledge of detailed operations in their departments. The monthly reports they present to top management are more accurate and helpful than if the evaluation were done by a staff man unfamiliar with general departmental procedure.

Supplemental Uses

A complete and comprehensive picture of customer attitude in the hands of the line supervision as well as of top management will be found to have many uses. The policy-forming executives will use it as a guide when seeking to establish new policies, evaluating old ones, and generally studying the relationship of the company to the customers it serves. When established for a sufficient period of time, through good years and bad, and through changes in policy, it will furnish information upon which predictions may be based of the probable effect of future changes. Recently adopted policies may be checked against customer reaction and if needed, modifications may be made.

The overall reflection of customer attitudes will reveal weak spots in procedure and practice and will indicate those places in the existing procedures of the company where consideration should be given to changes. Where the weak spot seems to be employee performance, the report will furnish a basis for the establishment of training programs which will be more effective because they will be known to be based on actual experience rather than on theory.

The executive who is expected to talk before customer groups in his territory will be in possession of information from which he will be able to anticipate customer reaction to what he says and prepare accordingly. In testimony before regulatory bodies, the executive can speak with more assurance on proposed changes in policy because of his knowledge of general customer attitudes in his territory and can present concrete information to support his judgment.

In conclusion, then, it is believed that top policy-making executives, who are anxious to know what people think about their policies and practices, will consider tapping every source of information on customer attitudes available within the company. The responsibility for collecting and utilizing the information gained should be centralized in a person or group representing all contact units of the organization. This responsibility should include:

1. Establishing standards and procedures for the collection of information;
2. Summarizing the information;
3. Evaluating the reasons for changes in customer attitude;
4. Distributing the information to all interested, including not only policy-making executives but all supervision whose activities may in some manner influence customer attitude;
5. Recommending changes in policies and practices based on such summarized and evaluated information.

Under these conditions then, the policy-makers of top management can be assured that they are in possession of an accurate picture of customer opinion and are in a position to make correct decisions on matters affecting their customers.

C. M. Benedict

C. M. BENEDICT, retired employee of The United Gas Improvement Company, died on May 3.

Mr. Benedict came to The United Gas Improvement Company in 1895, and from that date until retirement in 1933, had been located in Johnstown and Gloversville, New York, with the former Fulton County Gas and Electric Company (now part of the Niagara Hudson System), The Wyandotte County Gas Company, Kansas City, Kan., Philadelphia Gas Works, Philadelphia, Pa. He had also been Vice-President and Treasurer of the former Charleston Consolidated Railway and Lighting Company, Charleston, S. C., and President of the Des Moines Gas Company, Des Moines, Ia.

Electrical Equipment Committee Meeting

C. A. Corney, *Chairman*

OVER 90 members and guests attended the 42nd meeting of the Electrical Equipment Committee held at the Edgewater Beach Hotel, Chicago, Illinois, April 28 and 29. This meeting was held in conjunction with meetings of several of the other engineering committees of the Institute and the combined attendance of over 300 is indicative of the interest in these sessions.

Closed Session

The customary closed session of the committee included reports on apparatus troubles, oil fires, new equipment purchases and switchgear developments.

F. S. Brown presented a summary of the semi-annual apparatus trouble report for the period August 15, 1946 to February 15, 1947. There were 121 cases of trouble reported, or an average of 21 per month, which is the same as the average for the past 8½ year period. No failures of lightning arresters were reported. For the corresponding period the previous year, troubles from lightning arresters accounted for 7½ per cent of the total. Of the troubles classified as major, those occurring most frequently were: motors—10, transformers (over 500 kva)—4, turbo generators—4, oil circuit breakers—3, and reactors—2. Of those classified minor, those occurring most frequently were oil circuit breakers—14, motors—13, transformers (over 500 kva)—13, induction regulators—9, constant current transformers—8. Following this report, a characteristically active round-table discussion of specific cases of trouble was held.

R. W. Wilbraham reviewed recent activities of the AEIC and the Joint AEIC - EEI - NEMA Committees on Switching and Switchgear. He summarized presentations made to the AEIC committee by several manufacturers of switchgear. The committee's activities on improvements in circuit breaker ratings, standardization of mountings, procuring spare parts for oil circuit breakers, and standardization of tripping methods were reviewed. E. B. Shew presented a revised draft of the "Guide for Specifications on Indoor Metal-Clad Switchgear." Upon receipt of comments of the members, a final draft of this report will be prepared.

On behalf of H. K. Sels, T. Seely presented a report on Oil Fires occurring since the October 1946 meeting of the committee. Thirteen cases of oil fires or explosions were reported. Transformers were the source of most of these cases.

Open Session

W. M. Hanna gave an interesting preview of factors in "Planning of the Baltimore System." Load densities range from 4 kva to 500 kva per square mile in areas outside the city and from 500 kva to 40,000 kva within the city. The lower densities are expected to double within the next ten years. Before studies are undertaken, policies with regard to service levels to be maintained in event of failures of major equipment are established. Ten to fifteen years in the future is considered in making a study of an area. The factors considered include: cost of construction, including supply, substation and feeders, per kva charge for equipment used for other purposes; losses; duct rental; cost of operation; and cost of maintenance. The sum of the annual carrying charges of all factors for the period considered is calculated and used as a basis of comparison with other methods.

"The Trend of System Load" was the subject of a presentation by H. A. Dryar, which created considerable interest. The very considerable influence of weather conditions on system peak loads was illustrated. The influence of this factor necessarily needs to be considered in obtaining load trends by comparing system peak loads. Weightings in megawatts are assigned to each of the variables making up the weather component effect on the load, i.e., wind, cloudiness and temperature. Deducting these and other variables from the system peak load will leave what can be considered the peak base load, and this quantity compared to the peak base load for previous years will give the trend of the system load.

"Progress Report of the AIEE Insulation Resistance Subcommittee 1941-1947" was presented by R. L. Webb, Chairman of the Subcommittee. Three procedures for determining the adequacy of insulation resistance of electric machinery, each having its independent value and neither suitable nor sufficient to supplant the other, are necessary. These are: (a) visual inspection of the insulation for mechanical damage, (b) insulation resistance tests, (c) high voltage proof tests. The insulation resistance test is of greatest value when periodic tests are made and compared. Mr. Webb reviewed the past activities of the EEI Electrical Equipment Committee and the AIEE Subcommittee, on development of insulation resistance tests and establishment of a base for "minimum insulation resistance" values. The work of these committees together with that of other groups and individuals in the industry has resulted in the preparation of AIEE Report No. 43 "Recommended Practice for Insulation Testing of A-C Rotating Machinery." This report outlines the various factors affecting insulation resistance and indicates methods of accounting for apparent inconsistencies in resistance readings. Insulation resistance of d-c machines is now under study by the subcommittee.

"The Jamaica Substation of the Consolidated Edison Company of New York, Inc." was described in a paper presented by A. M. deBellis. Simplicity and reliability were the major considerations in the design of the station which will provide for 300,000-kva load. Two 132-kv circuits are looped and supply 27-kv feeders for local distribution through a secondary network. Triple rated transformers were selected as being the most economical method of providing for emergency service. In order to fully utilize the thermal capacity of the transformers, the emergency rating was based on daily load cycles with ambient temperatures representative of actual conditions. Outdoor type oil breakers, compressed air operated are used for the 132-kv circuits. Indoor, air blast type breakers are used on the 27-kv circuits. Bus tie and feeder reactors are not used because of phase angle considerations. The cost of the increased breaker rating required was more than offset by the savings on reactors. The ultimate development of the station will utilize a land area of only 232 by 300 ft.

New developments of timely interest were reported by S. H. Mortensen of the Allis-Chalmers Manufacturing Company, J. B. McClure on behalf of D. M. Jones, General Electric Company, and Charles Wagner, Westinghouse Electric Corporation.

"The Operation of Outdoor Steam Plants" was described in a paper by H. G. Hiebeler which was presented by F. W. Smith. Substantial savings in investment have resulted from the use of

the semi-outdoor plants. Actual operation experience has been satisfactory although some changes will be made in newer designs. The stations are preferred by operating personnel and no additional hazards are introduced. Maintenance required is no greater than closed stations but in severe weather it is complicated slightly by the need of providing temporary shelter. A complete outdoor station has been designed by the author's company which will make possible additional savings in investment. Some new operating problems with this type station are contemplated but their solution is not believed difficult.

Joint Session

A joint session with the Accident Prevention and Transmission and Distribution Committees was devoted to the presentation and discussion of a paper entitled "Five Years of Fatal Accidents in the Industry Point the Way to Prevention," by D. C. Stewart. This session is reported more fully in the write-up of the Transmission and Distribution Committee.

Transmission and Distribution Committee Meeting

L. R. Gaty, *Chairman*

THE forty-third meeting of the Transmission and Distribution Committee was held on April 28 and 29 at the Edgewater Beach Hotel, Chicago, Ill., with 185 members and guests in attendance. A joint session with the Electrical Equipment and Accident Prevention Committees was held during the morning of the second day.

The opening session was devoted to the Standards and Specifications Group under the sponsorship of R. R. Habberley.

Continued progress on the proposed joint EEI-NEMA specifications for insulators was reported by R. M. Havourd.

Line hardware specialties which included overhead cable clamps, service assemblies for attachment to buildings, guy plates and alley arm and angle braces for attachment to crossarms by means of horizontal bolts were described by E. K. Karcher, E. H. Kendall, W. E. Losie and the Chairman.

R. R. Habberley reported on the status of the proposed joint EEI-NEMA standardization of distribution fuses. A working group has been formed to analyze data collected on current fusing practices and recommendations.

F. W. Nimmer reported substantial progress on the proposed joint EEI-NEMA specifications for street lighting equipment and E. H. Richter discussed the status of standardization of street light sockets.

W. H. Edman, Chairman, IES Street and Highway Lighting Committee explained the engineering and economic factors leading to the 30-ft mounting height recommended by the IES for street lighting luminaires using lamps of 10,000 lumens or more. A discussion of the difficulties in complying with this recommendation followed. W. R. Bullard presented a paper by A. S. Anderson showing that a vertical shift of the order of one inch in the eye level of an automobile driver is equivalent to increasing the height of a street light from 25 to 30 ft as far as the point of windshield cutoff is concerned.

F. A. Ashbaugh urged utilities to review their timber product policies to keep them in step with existing conditions. He recommended limited use of the newer preservative treatments until service records comparable with those of creosoted timber can be accumulated. He stressed the importance of attention to specifications for timber products other than poles in view of the poorer quality of timber now available, the fallacy of installing inferior material on rural lines remote from service points and the importance of a definite salvage program in view of the longer life of fully treated poles now being used. He also noted that, in general, poles do not grow in the heights and classes desired and that it is good engineering to make the best use of the sizes and classes available.

The history of ASA wood pole specifications was reviewed by L. G. Smith, and he outlined a revision which has been prepared to combine existing permanent and war standards in a new single permanent standard covering all applicable species.

A wide variety of subjects was presented by the Overhead Group sponsored by H. E. Stites.

A paper by A. J. Borchers and T. N. Cofer describing the design of wood H-frame structures for 138-kv transmission lines was presented by Mr. Cofer. The design evolved for future use features the use of bands and clamps instead of gains, timber connector rings and bolts for all attachments to the poles and arms above the ground line. Spar rather than plank type crossarms are used to reduce cost and to take advantage of the greater strength of the timber in its natural form. Bearing plates are installed on alternate poles, at crossings and on all structures using 70-ft or longer poles in order to prevent overturning and to reduce ground resistance. Storm guyed structures are eliminated.

A paper by W. McLean and W. H. Clark outlining the results of 16 years of lightning protection work on a 4-kv distribution system was presented by Mr. McLean. Lowering ground resistance at all lightning arrester locations and the use of a common neutral were found to be the most effective means of eliminating service interruptions due to lightning.

R. M. Havourd discussed the effect of fault currents on corroded connections and described the results of laboratory tests with different types of connectors and installation procedures. Field experience and laboratory tests indicated that connectors which keep the conductors separated from each other are the most desirable. The recommended installation procedures includes scraping the outside strands of corroded conductors with the back of a lineman's knife and coating both the conductor and the entire connector assembly with corrosion inhibiting grease.

A round table discussion of miscellaneous items followed. Subjects covered included the use of stereoptic aerial photographs for transmission line surveys and the use of helicopters for line patrolling.

The General Engineering Group sponsored by T. J. Brosnan opened the program for the second day.

L. G. Smith described the transmission and distribution system in Germany. The principal source of fuel is brown coal (lignite) and since this coal cannot be transported it is necessary to locate the generating plants at the mine. Most of the major load centers are away from the cities. These two factors create a

requirement for an extensive transmission system. Systems of 220-kv and 100 to 150-kv are used. No lightning protection is used on the 220-kv lines and little is used at lesser voltages. Transformers are wye-connected with neutrals grounded through Petersen coils. The standard transformer is a 100 mva, self-contained, three-phase unit with forced oil and air-cooling designed to permit attachment of railroad trucks. The trend in circuit breakers is away from oil to air or water. Sub-transmission lines are usually at 30-kv and most distribution is at 6-kv. The bulk of the distribution lines in cities is underground.

C. E. Bathe described a scheme for the selective closing of feeders to restore service to a distribution system which has been out of service for a long period.

N. E. Brown described an improved means of restoring a-c networks which has recently been installed in Buffalo. Master control switching cubicles permit the simultaneous closure of several breakers providing a more adequate means of rapidly restoring load.

B. C. Sherwood reported that the AEIC-EEI-NEMA committee on motor starting currents has reached agreements on single-phase motor starting current rules and that progress is being made on rules for three-phase motors.

J. W. Anderson reported on activities of the ACRMA-EEI-NEMA committee on air-conditioning and refrigeration equipment. Requests for service to 3 hp and 5 hp air conditioning equipment recently have been confined chiefly to polyphase service. It now has been revealed however that single-phase motors can be obtained with reasonable deliveries and can be applied successfully to most air-conditioning equipment in these ratings. Thus, local utilities were urged to work closely with local dealer outlets stressing the necessity for close cooperation between dealer and utility in making correct motor applications for air conditioner customers.

A round table discussion on aluminum versus copper conductors followed. Shortages of copper and shortages of steel for use in ACSR conductor have forced consideration of the use of straight aluminum conductor. Some use of straight aluminum for both primary lines and service entrance cable was reported. However, difficulties with terminations and connectors was indicated. Manufacturers representatives gave hope for some increase in the production of ACSR and copper conductors in the future.

The joint session with the Accident Prevention and Electrical Equipment Committees was devoted chiefly to accident prevention.

P. H. Chase, Chairman, Engineering Division General Committee, briefly outlined the purpose and organization of that committee.

D. C. Stewart, Chairman, Accident Prevention Committee, pointed out that the frequency rate of disabling accidents for electric utilities is slightly better than the average for all industry while the severity rate is considerably worse than the average. He called attention to the fact that both the frequency rate and the fatality rate declined consistently until about 1933. Since that time, however, the frequency rate gradually has increased while the fatality rate continues to decrease.

He then presented analyses of 557 fatalities occurring during the five year period 1941-45. An analysis by type of accident shows that electric shock or burn consistently accounts for about 70 per cent of the total. Analysis by occupation shows that electric shock and burn to linemen alone totaled 225 cases. Distribution by ages shows that the 40-45 year group leads the list. There is a marked peak during June and July for electric shock and burn fatalities while no seasonal tendency is apparent for all other types. The peak hour of the day is from 9 to 10 a.m. and a secondary peak occurs from 3 to 4 p.m. Analysis showing distribution by years of service with the company and by years of experience at the kind of work being done at the time of the accident reveals that 126 of the 503 cases where this type of data was available occurred to men with less than four years of service and less than four years of experience. However, there was also a significant hump in the 15-19 year group both in years of service and in years of experience.

Fatal accidents in and around substations was discussed by H. S. Fitch who emphasized that a formidable set of rules and regulations is insufficient to insure a high standard of safety. He stressed the importance of designing substations to make it virtually impossible to get into a dangerous position or to provide barriers sufficient to challenge any mental lapse. He also recommended the use of watchers whose sole duty is to watch their fellow workers.

The round table discussion on aluminum versus copper conductors was continued during the session of the Underground Group sponsored by M. W. Ghen.

The problems in using aluminum in underground systems include the greater size required for equivalent conductivity with resultant requirements for larger ducts, the greater coefficient of expansion with consequent reduction in sheath life and the necessity for development of satisfactory connectors. It was suggested that aluminum cable may have considerable application for circuits which are not heavily loaded such as those for street lighting, signaling and control.

A movie showing the installation of two buried, three-phase, 66-kv cables on Long Island was presented by H. J. DeBaun. These circuits were placed underground to eliminate a two-circuit overhead line near an airport.

E. F. Nuezel presented additional data from the 1945 Cable Operations Report and outlined plans to review the form of the report to see if it can be revised to make it more useful.

A. Bodicky indicated good progress on the Network Operations Report.

A general discussion of submarine cable installations followed. J. A. TenBrook described an installation at a river crossing where 5 out of 8 cables failed within a few months. All faults were in a radius of 20 ft and close to the pier where the cables left the river. This installation had been in service for about 16 years with only one previous failure. Salvage has revealed evidence of communicating faults.

A discussion of subway transformer maintenance revealed that individual company practices vary widely. J. E. McCormack presented a paper describing practices of his company in detail. Transformers are given a visual inspection and pressure check every three months while dielectric samples are taken once per year or twice per year in wet manholes.

Methods and practices concerning temperature surveys of duct lines were also discussed. Some utilities indicated that they conduct extensive surveys regularly at critical points on their systems while others conduct only specific surveys for such purposes as installation of new lines. In connection with the installation of a 132-kv H.P.O.P. line, C. T. Hatcher described preliminary tests prior to actual tests under load which are contemplated to determine seasonal values of soil resistivity as a check against values used in calculating ratings.

PERSONALS

ARTHUR D. SPENCER, treasurer of The Detroit Edison Company, retired May 1, following 46 years of service to the company. Born in Raisin Township, Lenawee County, Mich., in 1882, he graduated from Central High School in Detroit. He worked in the meter and payroll departments of the Edison Illuminating Company of Detroit while attending the University of Michigan from which he graduated in 1906 with a bachelor of science degree in electrical engineering.

In 1909 he was appointed superintendent of the meter department. He became interested in utility rates and from 1909 to 1932 took an active part in studying and constructing the company's rate schedules. In addition, he made valuable contributions toward establishing the company's statistical and accounting records.

In 1914 he was made statistician of the company in addition to his other duties. In 1915 he was appointed assistant to Mr. Alfred C. Marshall, then vice-president of the company. Mr. Spencer was appointed controller in 1921 and he and his associates established the company's present control department with its budget, statistical and rate divisions. He was elected treasurer in 1932 which position he held until his retirement. No successor has been announced.

EDGAR FORD GRAHAM, assistant to the president of Southwestern Gas and Electric Company since 1942, has been promoted to vice-president and manager of the company's East Texas division.

Graham was named to succeed the late Knox Lee of Marshall, Tex., and has established himself in the division offices at Marshall.

A graduate of North Carolina State College, Graham has been associated with Southwestern and associated companies since 1925, beginning his career at Marshall, Tex., after two years with General Electric Company at Lynn, Mass.

He spent some time at Marshall, later going to Texarkana, then to Shreveport, after which he spent several years in Dallas with the Central and South West Utilities Company. He came to Shreveport in 1932 as rate engineer, later heading that department. In 1941 he was made a member of the board of directors and in 1942 assistant to the president.

JOHN C. COSTELLO, for the past seven and one-half years in charge of advertising for Ohio Edison Co., has been named assistant to President Walter H. Sammis. Following graduation from the University of California, Mr. Costello entered the employ of the Chattanooga (Tenn.) Railway & Light Co. as a power salesman. During more than 25 years in the utility business he has engaged in power, lighting, merchandise and securities sales, and in advertising and publicity work, He became advertising manager of what was then the Tennessee Electric Power Co. in 1923 and joined the Ohio Edison organization in 1939.

JOHN E. HUNTER, senior engineer with the Carolina Power and Light Company, has been named distribution engineer for western North Carolina to succeed ROBERT G. FORTUNE, recently promoted to general operating superintendent. Hunter has been with the company for nine years.

GEORGE QUINAN, chief consulting engineer for the Puget Sound Power and Light Company, has retired. He entered the industry following his graduation from the University of California in 1903. He worked for a number of utilities in Washington state before joining Puget Sound of which he became chief electrical engineer in 1919, chief engineer in 1935, and chief consulting engineer in 1942. He served a term as a vice-president of the American Institute of Electrical Engineers.

H. K. DOYLE, operating superintendent of Dallas Power & Light Company, has been appointed assistant to President G. L. MacGregor. Since joining the company in 1931, Doyle has also served as distribution engineer and chief engineer. He had previous experience with the West Penn Power Co. and Electric Bond & Share Co.

VINCENT C. BRENNAN, who joined the Union Electric Company of Missouri in 1942 as executive director of personnel, has been elected vice-president in charge of personnel, a newly created position.

Prior to his association with the St. Louis utility, he had been in charge of personnel and industrial relations at the Tidewater Associated Oil Company, Bayonne, N. J. He is a member of the industrial relations committee of Edison Electric Institute.

A. SCUDDER MOORE has been appointed general superintendent of the Brockton (Mass.) Edison Company, succeeding the late Karl C. Mason. A graduate of the University of Maine, he entered the utility field in the sales department of the Cape Breton Electric Co. He joined the Brockton company in 1913 and in recent years has been in charge of the industrial power sales department of the company.

ALBION DAVIS has retired as chief hydraulic engineer of the Union Electric Company of Missouri in St. Louis. Mr. Davis has worked in the field of river hydraulics and power for the past 33 years, having been connected with operation of the Keokuk (Iowa) plant on the Mississippi River since 1914, and of both that plant and the Bagnell plant in Missouri since 1931.

JOHN A. TOBYN has retired as plant operating superintendent of the Washington Water Power Company, Spokane, Wash., after 40 years with the company. After holding various operating positions, he was made plant operating superintendent in 1939.

MALCOLM W. SMITH, superintendent of electrical construction for the Ohio Edison Company, has been appointed to the newly created position of superintendent of production and transmission construction.

A graduate of Penn State College in 1922, Smith worked for a year with the Carnegie Steel Corp. before joining West Penn Power Company as a service engineer. Then in the employ of Stevens & Wood, Inc., he worked on the construction of the Toronto steam station for the Ohio River Power Co., a predecessor of Ohio Edison.

When the plant was complete, he served as its chief electrician for ten years. In 1937, he became superintendent of electrical construction for Ohio Edison.

ALFRED L. RICHMOND, superintendent of electrical operations, will take on the additional duties of maintenance of all electrical equipment installed in operating stations and substations.

Richmond has been with Ohio Edison and a predecessor company since 1913. He has been superintendent of production, and superintendent of electrical operations.

Announcement has been made of the appointment of RAYMOND K. GRUBB as assistant operating manager, electric of the Delaware Power & Light Co., Wilmington.

Following graduation from the University of Delaware, Mr. Grubb became identified with the local utility company as a cadet engineer. He was responsible for electrolysis work within the company from 1933 to 1939 when he was transferred to the electrical engineering department as engineering assistant. In 1945 he was appointed assistant electrical engineer in the development engineering department, and the following year became assistant superintendent of the transmission and distribution department, the position he held until his present appointment.

F. J. FISHBURNE, chief dispatcher for the South Carolina Power Co., Charleston, for the past five years, has been appointed transmission superintendent. He will be in charge of operations and maintenance of transmission lines and substations. Mr. Fishburne succeeds E. E. CAMBRON, veteran employee, who died last December. WILLIAM E. LECROY has been appointed to succeed Mr. FISHBURNE.

Knox Lee

KNOX LEE, 60, vice-president and East Texas division manager of Southwestern Gas and Electric Company, died at Marshall, Tex., April 9.

A graduate of Texas A. and M. College he began his career in Fort Worth, Tex., in 1908 as meter tester. He later worked for Stone & Webster at Beaumont, Tex., and went to Marshall, Tex., in 1921 as division engineer for American Public Service Company.

He became general manager and vice-president of East Texas Public Service Company in 1925, and when Southwestern acquired this company in 1927 he became division manager. He was named to board of directors in 1934 and vice-president in 1938.

Knox Lee had an outstanding record of leadership in electric industry in East Texas and was considered a leading civic leader of that area for many years.

CONVENTIONS AND MEETINGS

1947

JUNE

2-5	EDISON ELECTRIC INSTITUTE, Annual Meeting, Atlantic City, N. J.
4-6	Pacific Coast Electrical Association, Annual Meeting, Mission Inn, Riverside, Calif.
16-20	American Society of Mechanical Engineers, Chalfonte-Haddon Hall, Atlantic City, N. J.
18-19	Public Utility Advertising Association, Book Cadillac Hotel, Detroit, Mich.
18-20	Canadian Electrical Association, 57th Annual Convention, Algonquin Hotel, St. Andrews, N. B.
22-26	National Electrical Manufacturers Association, The Homestead, Hot Springs, Va.
24-27	National District Heating Association, The Chalfonte-Haddon Hotel, Atlantic City, N. J.

JULY

16-18	American Society of Civil Engineers, Duluth, Minn.

SEPTEMBER

5-11	National Electrical Contractors Association, San Francisco, Cal.
15-19	Illuminating Engineering Society, Roosevelt Hotel, New Orleans, La.
17-19	Indiana Electric Association, French Lick Springs Hotel, French Lick, Indiana
22-24	Northwestern Section, International Association of Electrical Inspectors, Eugene Hotel, Eugene, Ore.
25-26	Southeastern Electric Exchange, Fall Conference Engineering and Operation Section, Henry Grady Hotel, Atlanta, Ga.
25-27	Southeastern Electric Exchange, Engineering and Operation, Henry Grady Hotel, Atlanta, Ga.
29-Oct. 1	Southwestern Section, International Association of Electrical Inspectors, Mission Inn, Riverside, Calif.

OCTOBER

6-7	Prime Movers Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
6-7	Electrical Equipment Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
6-8	American Gas Association, Annual meeting, Cleveland, Ohio.
6-10	35th National Safety Congress and Exposition, Chicago, Ill.
9-10	Transmission and Distribution Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
13-15	Western Section, International Association of Electrical Inspectors, Mount Royal Hotel, Montreal, Can.
15-18	American Society of Civil Engineers, Fall Meeting, New Orleans, La.
20-22	Eastern Section, International Association of Electrical Inspectors, Seaside Hotel, Atlantic City, N. J.
27-29	Southern Section, International Association of Electrical Inspectors, George Washington Hotel, Jacksonville, Fla.
27-30	National Electrical Manufacturers Association, Hotel Traymore, Atlantic City, N. J.
29-31	Southeastern Electric Exchange, General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

ROY E. HAYMAN has joined the Chickasha staff of the Public Service Co. of Oklahoma as agricultural development engineer. He will assist in conducting the company's program on rural development in the southwestern division. Mr. Hayman has a broad background of experience in rural electrification work. After spending four years at the Oklahoma A. & M. College studying electrical engineering, Mr. Hayman was employed by the Oklahoma Gas & Electric Co., where he set up the safety department and served as safety engineer for one year. For the following 18 years he was manager of the rural service department. Mr. Hayman has served as chairman of the farm utilization equipment committee of the Edison Electric Institute and for four years was chairman of the Southwestern section. He is also a member of the AIEE.

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